

**COLORADO DEPARTMENT OF PUBLIC HEALTH & ENVIRONMENT**

**HAZARDOUS MATERIALS AND  
WASTE MANAGEMENT DIVISION**

**DRAFT STATE RCRA PERMIT**

**FACILITY:** DENVER ARAPAHOE CHEMICAL WASTE PROCESSING FACILITY  
(DACWPF) RECONSTRUCTED CELL

**ADDRESS:** 25700 EAST YALE AVENUE  
AURORA, COLORADO 80014

**LATITUDE, LONGITUDE:** 39° 39' 31.9" N, 104° 41' 07.8" W; or  
39.658908, -104.685491

**EPA ID NO.:** COD000695007

**DATE OF ISSUANCE:** [INSERT DATE]

**EFFECTIVE DATE:** [INSERT DATE]

**EXPIRATION DATE:** [INSERT DATE]

**PERMIT NUMBER:** [INSERT NUMBER]

## STATE RCRA PERMIT NO. CO[INSERT NUMBER]

FACILITY: DACWPF RECONSTRUCTED CELL

ADDRESS: 25700 EAST YALE AVENUE  
AURORA, COLORADO 80014

EPA ID NO.: COD000695007

Pursuant to the Colorado Hazardous Waste Act (Title 25, Article 15, Sections 101 *et. seq.*, “the Act”) and regulations promulgated thereunder by the Colorado Board of Health and Colorado Hazardous Waste Commission (codified in Title 6 of the Code of Colorado Regulations, “CCR”), a permit is issued to Waste Management of Colorado, Inc. (WMC, the “Permittee”), to permit the Permittee to conduct Post-Closure care operations at the DACWPF Reconstructed Cell (the “Facility”) located in Arapahoe County at 25700 East Yale Avenue, Aurora, Colorado, at latitude 39° 39’ 31.9” N and longitude 104° 41’ 07.8” W. The Permittee must comply with terms and conditions of this State RCRA Permit Number [INSERT NUMBER] (the “Permit”).

The Permit consists of the conditions contained herein, which includes any attachment, and the applicable regulations contained in 6 CCR 1007-3, Parts 260 through 268, 2 and 100 as specified in the Permit. Applicable regulations are those which are in effect on the date of issuance of the Permit. This Permit is based on the assumption that the information submitted in the Colorado Hazardous Waste Notification Form and [INSERT DATE] RCRA Part A, and Part B, Permit Application (collectively the “Application”) is accurate and that the Facility will be maintained and operated as specified in the Application. Any inaccuracies found in the submitted information may be grounds for the termination, revocation, and reissuance or modification of this Permit in accordance with 6 CCR 1007-3, Section 100.6 and for potential enforcement action. The Permittee must inform the Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management (the “Department” or “Division”) of any deviation from changes in the information in the Application which would affect the Permittee’s ability to comply with the applicable regulations or permit conditions.

This Permit is effective as of [INSERT DATE] and shall remain into effect until for a ten year duration unless revoked, and reissued, or terminated.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

Doug Knappe, Program Manager  
Hazardous Waste Program  
Hazardous Materials and Waste Management Division  
Colorado Department of Public Health and Environment

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## ATTACHMENTS

- A Part A Application
- A-1 Figures
- A-2 2015 Class 1 Permit Modifications
- A-3 2016 Class 1 Permit Modification
- B Waste Analysis Plan
- C Inspection and Maintenance Plan
- D Contingency Plan
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- F Groundwater Protection Program
- G Leachate Pumping Results
- H Personnel Training Plan

## **PART I: STANDARD PERMIT CONDITIONS**

### **I.A. EFFECT OF PERMIT**

The Permittee must manage the facility throughout the Post-Closure Period in accordance with the conditions of this Permit. Any post-closure care activities at the reconstructed cell not authorized in this Permit are prohibited. Compliance with this Permit constitutes compliance, for purposes of enforcement, with the Act and Subtitle C of RCRA except for those requirements not included in this Permit which subsequently become effective by statute or which are promulgated under Part 268 of the state or federal regulations restricting the placement of hazardous waste in or on the land. Issuance of this Permit does not preclude the Colorado Department of Public Health and Environment from issuing any order pursuant to the immediate and substantial threat provisions of the Act. [6 CCR 1007-3, Sections 264.4].

### **I.B. PERMIT MODIFICATION, REVOCATION AND REISSUANCE, AND TERMINATION**

This Permit may be modified, revoked and reissued, or terminated for cause, as specified in 6 CCR 1007-3, Sections 100.60, 100.61, 100.63, and 100.64. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any permit condition.

### **I.C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

### **I.D. DEFINITIONS**

For purposes of this Permit, terms used herein have the same meaning as those in 6 CCR 1007-3, Parts 2, 99, 100, 101 and 260 through 279, unless this Permit specifically provides otherwise. Where terms are not defined in the regulations or the Permit, the meaning associated with such terms is as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term. "Director" means the Director of the Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division, or his/her designee or authorized representative. "Act" means the Colorado Hazardous Waste Act, C.R.S. §§ 25-15-101, et seq.

### **I.E. DUTIES AND REQUIREMENTS**

#### **I.E.1. Duty to Comply**

The Permittee must comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any Permit

noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of the Act and is grounds for enforcement action; for Permit termination, revocation and reissuance, or modification; or for denial of a Permit renewal application. [6 CCR 1007-3, Sections 100.42(a), 100.61, and 100.64].

#### I.E.2. Duty to Reapply

If the Permittee wishes to continue an activity allowed by this Permit after the expiration date of this Permit, the Permittee must submit a complete application for a new Permit at least 180 days prior to Permit expiration. [6 CCR 1007-3, Sections 100.42(b) and 100.11(e)(1)].

#### I.E.3. Permit Expiration

Pursuant to 6 CCR 1007-3, Section 100.45, this Permit shall be effective for a fixed term not to exceed ten years. The Permit and all conditions herein will remain in effect beyond the Permit's expiration date, if the Permittee has submitted a timely, complete application and, through no fault of the Permittee, a new permit has not been issued. [6 CCR 1007-3, Section 100.11(e)(2)].

#### I.E.4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit. [6 CCR 1007-3, Section 100.42(c)].

#### I.E.5. Duty to Mitigate

The Permittee must take all reasonable steps to minimize or correct any adverse impact on human health or the environment resulting from noncompliance with this Permit [6 CCR 1007-3, Sections 100.42(d)].

#### I.E.6. Proper Operation and Maintenance

The Permittee must at all times properly operate and maintain all facilities and systems of disposal and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit. [6 CCR 1007-3, Section 100.42(e)].

#### I.E.7. Duty to Provide Information

The Permittee must furnish to the Director, within a reasonable time, any relevant information which the Director may request, to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance

with this Permit. The Permittee must also furnish to the Director, upon request, copies of records required to be kept by this Permit. [6 CCR 1007-3, Sections 264.74(a), 100.42(h)].

#### I.E.8. Inspection and Entry

The Permittee must allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- I.E.8.a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
- I.E.8.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
- I.E.8.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- I.E.8.d. Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by the Act, any substances or parameters at any location. [6 CCR 1007-3, Section 100.42(i)].

#### I.E.9. Monitoring and Records

- I.E.9.a. Samples and measurements taken for the purpose of monitoring must be representative of the monitored activity. If the Department finds, based on tests, studies, or other information, that the sampling or analytical methods being used are inadequate to achieve the performance objectives of the activity, the Director may require use of alternative methods which the Department finds are adequate to meet the performance objectives of the activity. [6 CCR 1007-3, Sections 100.42(j)(1) and 260.12].
- I.E.9.b. The Permittee must retain records of all monitoring information, including all calibration and maintenance records and all original written, printed or electronic recordings for continuous monitoring instrumentation, copies of all reports and records required by this Permit, and records of all data used to complete the application for this Permit from the date of the sample, measurement, report, record, certification, or application until post-closure care is terminated. This period may be extended by request of the Director at any time and is automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee must maintain records from all ground-water monitoring wells and associated ground-water surface elevations for the post-closure care period. [6 CCR 1007-3, Sections 264.74(b) and 100.42(j)(2)].

I.E.9.c. Pursuant to 6 CCR 1007-3, Section 100.42(j)(3), records of monitoring information must include:

- i. The dates, exact place, and times of sampling or measurements;
- ii. The individuals who performed the sampling or measurements;
- iii. The date(s) analyses were performed;
- iv. The individuals who performed the analyses;
- v. The analytical techniques or methods used; and
- vi. The results of such analyses.

#### I.E.10. Reporting Planned Changes

The Permittee must give notice to the Director, as soon as possible, of any planned physical alterations or additions to the permitted facility. [6 CCR 1007-3, Section 100.42(l)(1)].

#### I.E.11. Reporting Anticipated Noncompliance

The Permittee must give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with Permit requirements. [6 CCR 1007-3, Section 100.42(l)(2)].

#### I.E.12. Repairs

Repairs must be conducted and documented in accordance with the Inspection and Maintenance Plan contained in Permit Attachment C. The comments section of the “Repair Certification” form must indicate whether the feature being repaired is now functioning in a manner that complies with this Permit. The Permittee must continue post-closure care of the facility to the extent possible unless limited by repairs during the repair process.

#### I.E.13. Transfer of Permits

This Permit is not transferable to any person, except after notice to the Director. The Director may require modification or revocation and reissuance of the Permit. Before transferring ownership or operation of the facility during its post-closure care period, the Permittee must notify the new owner or operator in writing of the requirements of 6 CCR 1007-3, Parts 264 and 100, and of this Permit. [6 CCR 1007-3, Sections 100.42(l)(3), 100.62, and 264.12(c)].

#### I.E.14. Twenty-Four Hour Reporting

- I.E.14.a. The Permittee must report to the Director, and designee, any noncompliance which may endanger health or the environment. Any such information must be reported orally within 24 hours from the time the

Permittee becomes aware of the circumstances. The report must include the following:

- i. Information concerning release of any hazardous waste or hazardous constituent (Section 261, Appendix VIII and Section 264, Appendix IX) that may cause an endangerment to public drinking water supplies.
- ii. Any information of a release or discharge of hazardous waste or hazardous constituent (Section 261, Appendix VIII and Section 264, Appendix IX), or of a fire or explosion from the hazardous waste management facility which could threaten the environment or human health outside the facility.

I.E.14.b. The description of the occurrence and its cause must include:

- i. Name, address, and telephone number of the owner or operator;
- ii. Name, address, and telephone number of the facility;
- iii. Date, time, and type of incident;
- iv. Name and quantity of materials involved;
- v. The extent of injuries, if any;
- vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
- vii. Estimated quantity and disposition of recovered material that resulted from the incident.

I.E.14.c. A written submission must also be provided within five days of the time the Permittee becomes aware of the circumstances. The written submission must contain a description of the noncompliance and its cause; the period(s) of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Director may waive the five-day written notice requirement in favor of a written report within 15 days. [6 CCR 1007-3, Section 100.42(l)(6)].

#### I.E.15. Other Noncompliance

The Permittee must report all other instances of noncompliance not otherwise required to be reported in Permit Conditions I.E.10, I.E.11, and I.E.14., at the time annual monitoring reports are submitted. The reports must contain the information listed in Permit Condition I.E.14. [6 CCR 1007-3, Section 100.42(l)(7)].

#### I.E.16. Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the Permit application, or submitted incorrect information in the Permit application or in any report to the Director, the Permittee must submit such facts or information within thirty (30) calendars days. [6 CCR 1007-3, Section 100.42(l)(8)].

**I.F. SIGNATORY REQUIREMENT**

All applications, reports, or information submitted to or requested by the Director, their designee, or authorized representative, shall be signed and certified in accordance with 6 CCR 1007-3, Section 100.44(a) and 100.42(k).

**I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DIRECTOR OR DESIGNEE**

All reports, notifications, or other submissions which are required by this Permit to be sent or given to the Director and/or the Department should be sent by certified mail (or any other means that establishes proof of delivery) to:

Colorado Department of Public Health and Environment  
Hazardous Materials and Waste Management Division  
HMWMD-HWC-B2  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

If a report, notification, or other submission is sent by e-mail, the document must be e-mailed to the current project manager at the Department assigned to DACWPF. The text of the email must include language requesting the current project manager to reply and confirm receipt of the e-mail and any attachment to the e-mail. An e-mail and any attachment to the e-mail will not be deemed to have been received by the Director until the current project manager sends a reply confirming receipt of the e-mail and any attachment to the e-mail.

**I.H. CONFIDENTIAL INFORMATION**

In accordance with 6 CCR 1007-3, Part 2, the Permittee may claim confidential any information required to be submitted by this Permit.

**I.I. DOCUMENTS TO BE MAINTAINED AT THE POST-CLOSURE OPERATIONAL OFFICE**

The Permittee must maintain at the designated post-closure operational office, until post-closure care is completed and certified by an independent, Colorado registered Professional Engineer, the following documents and all amendments, revisions and modifications to these documents:

- I.I.1. Waste Analysis Plan, as required by 6 CCR 1007-3, Section 264.13 and this Permit.

- I.I.3. Inspection and Maintenance Plan as required by 6 CCR 1007-3, Section 264.15(b)(2) and this Permit.
- I.I.4. Personnel Training Plan, as required by 6 CCR 1007-3, Section 264.16(d) and this Permit.
- I.I.5. Contingency Plan as required by 6 CCR 1007-3, Section 264.53(a) and this Permit.
- I.I.6. Groundwater Monitoring Plan and Monitoring Reports, as required by 6 CCR 1007-3, Section 264, Subpart F and this Permit.
- I.I.6. All other documents required by Permit Condition I.E.9.
- I.I.7. This Permit and all approved modifications.
- I.I.8. Most recent Annual Report.

## **PART II: GENERAL FACILITY CONDITIONS**

### **II.A. DESIGN AND OPERATION OF FACILITY**

The Permittee must conduct post-closure care operations pursuant to the conditions of this Permit at the facility to minimize the possibility of a fire, explosion, or any unplanned, sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water or groundwater which could threaten human health or the environment. [6 CCR 1007-3, Section 264.31].

### **II.B. GENERAL WASTE ANALYSIS**

The Permittee must follow the waste analysis procedures for the ground-water collected pursuant to the ground-water monitoring program and for the reconstructed cell leachate as described in the attached Waste Analysis Plan, Permit Attachment B. [6 CCR 1007-3, Section 264.13].

### **II.C. PERSONNEL TRAINING**

The Permittee must conduct personnel training as required by 6 CCR 1007-3, Section 264.16, and as described in the Personnel Training Plan, Permit Attachment H.

### **II.D. PREPAREDNESS AND PREVENTION**

#### **II.D.1. Required Equipment**

At a minimum, the Permittee must maintain at the facility, or have available when on site at the facility, the equipment set forth in the Contingency Plan, Permit Attachment D. [6 CCR 1007-3, Section 264.32].

#### II.D.2. Testing and Maintenance of Equipment

The Permittee must test and maintain the equipment specified in Permit Condition II.D.1, as necessary, to assure its proper operation in time of emergency. [6 CCR 1007-3, Section 264.33].

#### II.D.3. Access to Communications System

The Permittee must provide communication devices (e.g., radios, cell phones, etc.) as set forth in the Contingency Plan, Permit Attachment D. [6 CCR 1007-3, Section 264.34].

#### II.D.4. Arrangements with Local Authorities

The Permittee must attempt to maintain arrangements with state and local authorities as set forth in the Preparedness and Prevention Plan, Permit Attachment D. If state or local officials refuse to enter into the preparedness and prevention arrangement with the Permittee, the Permittee must document this refusal. [6 CCR 1007-3, Section 264.37].

### II.E. CONTINGENCY PLAN

II.E.1. The Permittee must follow the procedures required by 6 CCR 1007-3, Subpart D, and as described in the attached Contingency Plan, Attachment D, and the following requirements.

#### II.E.2. Implementation of Plan

The Permittee must immediately carry out the provisions of the Contingency Plan, Permit Attachment D, whenever there is a fire, explosion, or release of hazardous waste or constituents which could threaten human health or the environment.

#### II.E.3. Copies of Plan

The Permittee must keep a copy of the Contingency Plan and all revisions at the designated post-closure operational office, and ensure that a copy is available at the facility when field operations personnel are at the facility. The Permittee must submit copies of the plan with all relevant maps, figures, and revisions to all local fire departments, hospitals and local emergency response teams that may be called to provide emergency services. [6 CCR 1007-3, Section 264.53]

#### II.E.4. Amendments to Plan

The Permittee must review and immediately amend, if necessary, the Contingency Plan if:

II.E.4.a. The Permit is revised;

II.E.4.b. The plan fails in an emergency;

- II.E.4.c. The facility changes -- in its design, construction, operation, maintenance, or other circumstances -- in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
  - II.E.4.d. The list of emergency coordinators changes; or
  - II.E.4.e. The list of emergency equipment changes. [6 CCR 1007-3, Section 264.54]
- II.E.5. Emergency Coordinator

A trained emergency coordinator must be available at all times in case of an emergency. [6 CCR 1007-3, Section 264.55].

The names, addresses, and phone numbers of all persons qualified to act as emergency coordinators must be supplied to the Director or his designee. [6 CCR 1007-3, Section 264.52(d)].

The emergency coordinator and their alternate are listed in Permit Attachment D.

## **II.F. MANIFEST SYSTEM**

The Permittee must comply with the manifest requirements of 6 CCR 1007-3 Subpart E, Part 262, and Sections 264.71 and 264.72 when and if hazardous wastes are shipped off-site.

## **II.G. FINANCIAL ASSURANCE AND COST ESTIMATE FOR FACILITY POST-CLOSURE CARE**

- II.G.1. The Permittee must maintain financial assurance during the post-closure period and comply with all applicable requirements of 6 CCR 1007-3 Part 266. [6 CCR 1007-3 266.14].
- II.G.2. During the post-closure care period for the facility, the Permittee shall adjust and revise in accordance with the regulations the post closure cost estimate in accordance with 6 CCR 1007-3 §266.13(b) and (c).
- II.G.3. The Permittee shall keep at the post-closure care offices the latest post closure cost estimate prepared in accordance with 6 CCR 1007-3 §266.13(a) and (c) and, when this estimate has been adjusted or revised in accordance with Condition II.G.2., the latest adjusted/revised post closure cost estimate. [6 CCR 1007-3, §266.13(d)]

## **II.H. LAND DISPOSAL RESTRICTIONS**

The Permittee must comply with all applicable 6 CCR 1007-3, Part 268 regulations.

## **II.I. PROHIBITED USES**

The Permittee is prohibited from accepting for storage and/or disposal at the reconstructed cell any hazardous waste, and from bringing onto the facility any hazardous waste for storage and/or disposal at the reconstructed cell.

## **PART III: POST-CLOSURE CARE**

### **III.A. SUMMARY OF POST-CLOSURE CARE OPERATIONS**

A summary of the post-closure care operations to be conducted at the facility is described below. Closure certification for the entire DACWPF, including the reconstructed cell facility, was received by the Director on March 8, 1990. The post-closure period was initiated after closure, and with this renewal Permit, post-closure care of the reconstructed cell will continue for the next ten (10) years. The Department may shorten or extend the post-closure care period. Post-closure care must be implemented in accordance with the conditions of this Permit. Post-closure care, monitoring and maintenance will include, but not be limited to, routine facility inspections; ground water sampling, analysis and statistical evaluation; recordkeeping, reporting and implementation of facility repairs and remedial activities as deemed necessary. [6 CCR 1007-3, Sections 264.110 and 264.117].

### **III.B. POST-CLOSURE PROCEDURES AND USE OF PROPERTY**

III.B.1. The Permittee must conduct post-closure care for the reconstructed cell pursuant to this Permit, to begin on the effective date of this Permit.

III.B.2. The Permittee must maintain and monitor the ground-water monitoring system in accordance with this Permit. [6 CCR 1007-3 Part 264 Subpart F].

III.B.3. The Permittee must comply with the requirements for landfills at the reconstructed cell, as follows:

III.B.3.a. Maintain the integrity and effectiveness of the final cover and liner systems, including making repairs to the cap, as necessary, to correct the effects of settling, subsidence, erosion, vegetation growth, or other events, and evaluate data collected from the secondary leachate collection system as an indicator of the integrity of the liner system;

III.B.3.b. Continue to operate the leachate collection and removal systems whenever leachate is detected;

III.B.3.b.i. The Permittee will monitor and manage the leachate in accordance with applicable state and federal Regulations. The Permittee will also inspect and manage the leachate collected from the primary and secondary leachate collection systems in accordance with Permit Attachments B and C. The results of leachate monitoring, pumping and inspections as well as documentation supporting compliance with the conditional delisting will be presented in the annual report.

- III.B.3.c. Maintain and monitor the ground-water monitoring system and comply with all other ground-water related Permit conditions;
- III.B.3.d. Prevent run-on and run-off from eroding or otherwise damaging the final cover; and
- III.B.3.e. Protect and maintain the following surveyed benchmarks which are illustrated in Permit Attachment E, Figure E-1:

BM-1A

BM-2A

[6 CCR 1007-3, Section 264.310(b)].

- III.B.4. The Permittee must not allow any use of the reconstructed cell which will disturb the integrity of the final cover, liners, any components of the containment system, or the function of the reconstructed cell's monitoring systems during the post-closure care period. [6 CCR 1007-3 264.117(c)].
- III.B.5. The Permittee must conduct all post-closure care activities in accordance with the provisions of this Permit. [6 CCR 1007-3 Sections 264.117(d) and 264.118(b)].

### **III.C. SECURITY**

The Permittee must maintain security at the facility during the post-closure care period, in accordance with the conditions of this Permit. [6 CCR 1007-3, Section 264.117(b)]. The reconstructed cell and groundwater monitoring wells and piezometers at the facility are completely surrounded by a security fence to control unauthorized entry as illustrated on Permit Attachment A-1, Figure 2. The security fence is a six foot high chain link fence with 3 strands of barbed wire across the top. It has a main gate which is kept closed and locked 24 hours a day except when authorized personnel need access to the reconstructed cell and groundwater monitoring wells and piezometers at the facility. Nevertheless, semi-annual inspections of security facilities in accordance with the Inspection Schedule (Permit Attachment C) must assure that access to the reconstructed cell and groundwater monitoring wells and piezometers at the facility by unauthorized personnel is not permitted and that the security system is well maintained. All locks must be repaired or replaced immediately after they are found to be broken. Any damage to the fence or gate must be repaired as soon as reasonably possible (repairs must be initiated no later than one month of their identification).

In accordance with 6 CCR 1007-3, Section 264.14 (c), warning signs are posted on the security fence and must be maintained. The warning signs must be visible from a distance of twenty five (25) feet, indicate that only authorized personnel are allowed to enter and that entry may be dangerous.

### **III.D. GENERAL INSPECTION REQUIREMENTS**

The Permittee must follow the inspection schedule set out in Permit Attachment C. The Permittee must inspect the components, structures and equipment located at the facility and used for facility operations in accordance with the Inspection Schedule. The Permittee must remedy any deterioration or malfunction discovered by an inspection, as detailed in Permit Attachment C. [6 CCR 1007-3, Sections 264.15(c) and 264.118(b)]. Records of inspections must be kept for the duration of the post-closure care period.

### **III.E. NOTICES AND CERTIFICATION**

- III.E.1. If the Permittee or any subsequent owner or operator of the land upon which the reconstructed cell is located, wishes to remove hazardous wastes and hazardous waste residues, the liner, or contaminated soils, then he/she must request a modification to this Permit in accordance with the applicable requirements in 6 CCR 1007-3 Parts 264 and 100. The Permittee or any subsequent owner or operator of the land must demonstrate that the removal of hazardous wastes will satisfy the criteria of 6 CCR 1007-3, Section 264.117(c). [6 CCR 1007-3, Section 264.119(c)].
- III.E.2. In the event the Division determines that post-closure care may cease, no later than 60 days after such determination the Permittee must submit to the Director, or designee, by registered mail, a certification that the post-closure care for the reconstructed cell was performed in accordance with the specifications in this Permit. The certification must be signed by the Permittee and an independent, Professional Engineer, registered in the State of Colorado. Documentation supporting the independent, registered Professional Engineer's certification must be furnished to the Director upon request until the Director releases the Permittee from the financial assurance requirements for post-closure care under 6 CCR 1007-3, Section 266.14. [6 CCR 1007-3, Section 264.120].

### **III.F. POST-CLOSURE PERMIT MODIFICATIONS**

- III.F.1. The Permittee must request a permit modification to authorize a change in this Permit. This request must be in accordance with applicable requirements of 6 CCR 1007-3 Parts 100 and 264, and must include a copy of the modification for approval by the Director. The Permittee must request a permit modification whenever changes in operating plans or facility design affect this Permit or post-closure care activities, there is a change in the expected year of post-closure care termination, or other events occur during the post-closure life of the facility that affect this Permit or post-closure care activities. The Permittee must submit a written request for a permit modification at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected this Permit or post-closure care activities. [6 CCR 1007-3 264.118(d)].

- III.F.2. If the Permittee determines the detection monitoring program no longer satisfies the requirements of 6 CCR 1007-3, Section 264.98, the Permittee must, within 90 days of the determination, submit an application for a permit modification according to the procedures specified in 6 CCR 1007-3, Part 100 to make any appropriate changes to the program. [6 CCR 1007-3, Section 264.98(h)].

#### **PART IV: GROUND-WATER PROTECTION PROGRAM**

The Permittee shall perform groundwater monitoring following the requirements of 6 CCR 1007-3 Part 264 Subpart F, the requirements of this Permit Part, and Permit Attachments B, C, and F of this Permit.

##### **IV.A. MONITORING WELL LOCATION AND CONSTRUCTION**

- IV.A.1. The Permittee must ensure that hazardous constituents detected in the groundwater from the regulated unit do not exceed the concentration limits set in this Permit in the uppermost aquifer underlying the waste management area beyond the point of compliance. The Permittee shall install and maintain monitoring wells as described below. [6 CCR 1007-3, § 264.92]
- IV.A.1.a. The point of compliance is the vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the reconstructed cell. The waste management area includes the liners and the cap cover of the reconstructed cell. [6 CCR 1007-3, § 264.95]
- IV.A.1.b. The uppermost aquifer is the group of hydraulically interconnected aquifers underlying the landfill cell. Listed from closest to ground surface to the furthest they are the Upper Sandstone Unit (USU), the Intermediate Sandstone Unit (ISU), and the Lower Sandstone Unit (LSU). All three units together comprise the uppermost aquifer. Wells in all three units together compromise the point of compliance. [6 CCR 1007-3, § 260.10]
- IV.A.1.c. The USU appears to generally flow from the southeast to the northwest. The USU is approximately fifteen to twenty-five feet below ground surface and due to the reconstructed cell being constructed through the USU, groundwater may or may not be directly beneath the cell but groundwater underlies the cell its east, north, and west sides. The ISU generally flows from the west southwest to the east northeast. The ISU is approximately thirty-five to forty-five feet below ground surface and underlies the southeast portion of the reconstructed cell. The LSU generally flows from the southeast to the northwest. The LSU is approximately sixty to eighty feet below ground surface and underlies the southern two thirds of the cell.

- IV.A.1.d. The point of compliance wells in the USU and ISU shall be proposed in an upcoming plan to be submitted to the Department for review and approval within forty-five days of this Permit becoming effective, reference Permit condition IV.E. The point of compliance wells in the LSU will remain the same.
- IV.A.1.e. The concentration limits referenced in IV.A.1. are the background concentrations for hazardous waste constituents within the USU, ISU, and LSU. The LSU background concentrations are included in Permit Attachment F while the USU and ISU background concentration limits will be established after the wells have been installed, developed, monitored and analyzed in accordance with this Part and Permit Attachment F.
- IV.A.2. The Permittee shall maintain groundwater monitoring wells in accordance with 6 CCR 1007-3, Part 264, Subpart F and the schedules, maps, and specifications in this Permit. The groundwater monitoring well system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer underlying the waste management area where saturated conditions exist or may be likely to occur in the future. This system must: 1) represent the quality of background water that has not been affected by leakage from the regulated unit; 2) represent the quality of groundwater passing the point of compliance; and 3) allow for the detection of contamination when hazardous waste or hazardous constituents have migrated from the waste management area to the uppermost aquifer. [6 CCR 1007-3, §264.97]
- IV.A.3. Locations of the existing monitoring wells in the LSU (P-112, 113, 114-R and P-115) and other monitoring points are shown in Figure 3. Relatively more permeable strata must be monitored with a significantly greater number of wells than less permeable strata. At a minimum, Permittee shall install, develop, and monitor six additional wells (three in the USU and three in the ISU).
- IV.A.4. Multiple saturated strata below the same point(s) shall be monitored with well clusters which allow sampling of each separate saturated stratum above unweathered bedrock. Well clusters will be used if the Department determines it is warranted.
- IV.A.5. Additional saturated zone or sand zone monitoring wells shall be installed to maintain compliance with Permit Condition IV.A.1. if subsurface conditions or the Department's or Permittee's knowledge of those conditions significantly change after Permit issuance. Such changes may include, but are not limited to, water level elevation or apparent flow direction changes, detection of water in previously dry observation wells, detection of solvents or other potentially sorbing or leaching organic compounds in a well or nearby well, or

discovery of previously unknown sand or silt strata during excavation or other exploration. [6 CCR 1007-3 §264.15, §264.91(b), §264.92, §264.97]

IV.A.5.a. If investigation or monitoring results indicate that the USU is dry or otherwise not providing representative and useful data (as determined by the Department), the Permittee may submit a request to modify the Permit to eliminate this water bearing zone from the monitoring program. [6 CCR 1007-3 § 100.61, § 100.63]

IV.A.6. The Department may modify this Permit to require the Permittee to install and sample additional wells at any time during Post-Closure or compliance periods if new information or unforeseen circumstances reveal a need for them. [6 CCR 1007-3 § 264.15, § 264.31, § 264.91, § 264.94, § 264.95, § 264.97, § 264.98, § 264.99, § 264.100]

IV.A.7. The Permittee shall construct additional or replacement monitoring wells in accordance with 6 CCR 1007-3 Part 264, Subpart F; USEPA OSWER Directive 9950.1, titled *RCRA Groundwater Monitoring Technical Enforcement Guidance Document*; USEPA Publication 600/4-89/034, titled *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*; and the following requirements.

IV.A.7.a. An experienced professional geologist or engineer shall supervise all work and report preparation.

IV.A.7.b. Groundwater samples must not be adversely affected by well construction materials.

IV.A.7.c.i. The Department must be notified in writing, within forty-five (45) days, once the Permittee verifies that construction materials may be affecting groundwater data from any monitoring well.

IV.A.7.c.ii. The Permittee must perform an evaluation if any detected contaminant may have been introduced by, adsorbed to, or leached from the construction materials used in the well. The evaluation shall include, but not be limited to, a demonstration and assessment that the well produces samples that are representative of the groundwater in the geologic formation surrounding the well and a determination as to whether the well should be replaced. The evaluation must be submitted within 30 days of the notification of the detection of the contaminants.

IV.A.7.d. Replacement wells must be positioned within ten (10) feet from an original well.

- IV.A.7.e. All equipment and materials (except filter pack and sealants, if used) introduced into a well bore must be steam cleaned, or washed with hot water and laboratory detergent (e.g. Alconox or equivalent) and thoroughly rinsed with distilled water, prior to introduction.
- IV.A.7.f. Well intakes must be designed and constructed to allow sufficient groundwater flow to the well for sampling; minimize the passage of formation, filter pack, or other materials into the well; and ensure sufficient structural integrity to prevent collapse of the well.
- IV.A.7.f.i. All screen material must be factory slotted.
- IV.A.7.f.ii. Filter pack material shall be installed between the formation and screen, be clean quartz sand or chemically inert beads, should not extend more than two feet above the screen, and lastly, the grain size and screen slot size shall be chosen to optimize the performance of the well as specified above.
- IV.A.7.f.iii. Each well completed in a saturated zone will be developed to restore the natural hydraulic conductivity of the formation adjacent to the screen and to remove turbidity.
- IV.A.7.f.iv. Monitoring wells completed in zones which do not produce water shall not be developed at the time of installation.
- IV.A.7.f.iv.a. Upon discovery of water in a previously dry well at an elevation above the bottom of the screen in the course of monitoring or inspection, the well shall be developed in accordance Permit Attachment F.
- IV.A.7.f.iv.b. If the previously dry well cannot be adequately developed solely due to lack of available groundwater, the well shall be sampled as specified in Permit Attachment F and the well shall be inspected monthly for the next two months to determine if the water surface elevation has changed. If the water surface elevation has then risen above the bottom of the screen, further development shall be attempted.
- IV.A.7.f.iv.c. If a previously dry well has not been successfully developed after three attempts the well shall either be replaced with a well screened at an elevation two feet or more below the original well screen, or a technical justification report shall be submitted to the Department within 180 days.

IV.A.7.g. At least two feet of bentonite pellets followed by bentonite-Portland

cement mixtures of anti-shrink cement mixtures must be used as sealants in the annular space above the screen and filter pack, to within ten feet from the surface.

- IV.A.7.g.i. A tremie pipe shall be used to place cement or other slurry in the annular space.
- IV.A.7.g.ii. The upper ten feet (approximately) of the annular space shall be sealed with cement, blending into a concrete apron extending at least three feet around the surface casing.
- IV.A.7.h. Steel surface casing with locking security caps shall be provided for all wells, whether dry or water producing.
- IV.A.7.i. Completion and development reports for each well must include at least the following information:
  - Date(s) of drilling, completion and development;
  - Drilling method and fluid(s) used, reference to source and analysis of any introduced water;
  - Well location, referenced to site within grid 0.5 foot;
  - Bore and casing(s) diameter(s);
  - Total depth, within 0.1 foot;
  - Drilling and lithologic logs;
  - Casing material specification and size, reference material certification;
  - Screen material, slot size and type, installed depth to top of screen and length;
  - Casing and screen joint type;
  - Filter pack material source, complete grain size analysis and D10 grain size estimated from specifications provided by sand supplier;
  - Filter pack volume;
  - Filter pack placement method;
  - Sealant material source(s), type(s), mix design;
  - Sealant volume;
  - Sealant placement method;
  - Surface seal design;
  - Well development procedures, including equipment and methods used, total daily amounts of water removed, recovery rates, and turbidity and water surface elevation measurements during development;
  - Description of protective cap;

- Surveyed ground and well reference elevations (concrete apron, top of surface and well casings); and
- Detailed drawing of well, with dimensions;

IV.A.7.j. Wells that are abandoned or otherwise not serving a purpose shall be plugged in accordance with Rule 16 (2 CCR 402-2), and shall not provide a preferential flow conduit.

IV.A.7.k. Well plugging and abandonment methods and certification will be submitted to the Director, or designee, within one hundred twenty (120) days from the date the wells are removed from the monitoring program.

IV.A.7.l. The Permittee shall submit monitoring well completion reports to the Department within 60 days after completion.

#### **IV.B. RCRA GROUND-WATER MONITORING PROGRAM**

The Permittee will conduct groundwater monitoring of the reconstructed cell for the length of the post-closure care period in accordance with this Part and Permit Attachment F. The Permittee must maintain the groundwater monitoring wells specified in this Part to ensure that they are suitable for use as RCRA groundwater monitoring wells. Additionally, the Permittee must update the sampling and monitoring forms in Permit Attachment C to include the new monitoring wells in the USU and ISU.

IV.B.1. To date, six groundwater monitoring wells have been used in the LSU to detect releases of contamination beneath the reconstructed cell. These wells are identified as P-112, P-113, P-114, P-114A, P-114A-R, and P-115. Four monitoring wells (P-112, P-113, P-114A-R, and P-115) are currently used in the LSU. P-112 is designated as the upgradient monitoring well, whereas the other three wells are designated as the downgradient wells. The Permittee will propose compliance points and upgradient monitoring locations in the USU and ISU in an upcoming plan submitted to the Department for review and approval.

IV.B.1.a. The Permittee shall monitor, in all wells located in the USU, ISU, and LSU, as described in this Part IV, for the parameters and constituents listed in Table F-1 of Permit Attachment F.

IV.B.1.b. For those parameters and constituents in Permit Condition IV.B.1.a. for which no background values are established at the time the Permit is issued, the Permittee shall establish background values in accordance with the following procedures.

IV.B.1.b.i. Background groundwater quality for a monitoring parameter

or constituent shall be based on data from quarterly sampling of the well (or wells) upgradient from the waste management unit for one (1) year.

- IV.B.1.b.ii. The Permittee shall take a minimum of one sample from each well and a minimum of four samples from the entire system used, to determine background water quality for each parameter and/or constituent each time the system is sampled.
- IV.B.2. The Permittee shall establish the background data pool for all new or replacement wells and previously dry wells which contain water by collecting at least four consecutive quarterly samples. If water is found in a well at least once, but less than four times during a background sample collection period, the data obtained during that period will be considered the background data.
- IV.B.3. Prior to taking water level elevation measurements, purging, or sampling each well, the well will be inspected. The condition of each well will be noted on the inspection log found in Permit Attachment C.
- IV.B.4. Water level measurements will be performed, and recorded, on all wells and sumps, including wells and sumps which have been historically dry.
  - IV.B.4.a. Upon discovery of water in a previously dry well, the well will be purged and the well shall be sampled according to the requirements of this Part of the Permit and according to Permit Attachment F.
  - IV.B.4.b. Upon discovery of water in a previously dry well or the discovery of a significant increase in water level elevation as defined by Permit Condition IV.C.1., the Permittee shall conduct an evaluation to determine the source of the water. This evaluation must be submitted to the Department as part of an upcoming annual report.
  - IV.B.4.c. Wells for which the water level elevation is below the screened interval will not be sampled.
- IV.B.5. Monitoring wells will be purged prior to sample collection.
- IV.B.6. Sampling and analysis will be performed according to the procedures in the Permit Attachment F.
- IV.B.7. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer (the group of three water bearing zones, which includes the USU, ISU and the LSU) at least annually. The determination shall include an evaluation of the groundwater flow patterns in any perched zones.

If there is no definable hydraulic gradient, this must be demonstrated by, at a minimum, mapping the water level elevations. This map must be included in the Annual Monitoring Report. [6 CCR 1007-3 §264.98(e) & §264.99(e)]

#### **IV.C. DATA EVALUATION**

IV.C.1. Semi-annually the Permittee shall perform a statistical evaluation of the water level elevations for all wells containing water.

IV.C.1.a. This analysis will be used to determine the mean plus two standard deviations for water levels. This number shall define a significant increase in water level elevation.

IV.C.1.b. The Annual Monitoring Report shall include hydrographs illustrating water level elevations.

IV.C.2. The Permittee shall submit a completed data validation checklist with each groundwater report, which shall be used to evaluate the validity of all data prior to performing a statistical analysis of the data.

IV.C.3. Data evaluations shall be performed in accordance with Permit Attachment F.

IV.C.3.a. The Permittee must determine if there is a statistically significant increase over the background value or applicable tolerance level for each of the inorganic parameters.

IV.C.3.b. For organic parameters, any detectable quantity above the method detection limit in any detection monitoring well or leak detection system is considered significant and subject to the requirements of Permit Condition IV.D.3.

IV.C.3.c. The Permittee must determine if there is a significant trend variation over the background value for each parameter.

IV.C.4. Statistical Procedures

IV.C.4.a. Trend analysis shall be performed to identify temporal changes in the data sets that may result from natural changes in the composition of the secure cell fluids and groundwater in the hydrostratigraphic units at the Facility and to evaluate the suitability of the current indicator parameters for making evaluation regarding potential, releases from the secure reconstructed cell.

IV.C.4.b. Comparative statistical analyses will be performed to identify significant changes in water quality that may indicate a release.

- IV.C.4.c. All statistical tests will be performed at the 95 percent and 99 percent level of significance.
- IV.C.4.d. Data for each analyzed parameter will be used for each individual well for trend analyses.
- IV.C.4.e. Data for each analyzed parameter will be pooled by well group (on a sandstone unit basis, USU wells will be one group, ISU wells will be another, and so forth) for descriptive and comparative statistical analyses. The Permittee shall annually evaluate the data to confirm or modify the grouping, based on distinctive geochemical characteristics of the groundwater.

IV.C.5. Data handling procedures for statistical analyses:

- IV.C.5.a. When parameter concentrations are not quantified below the appropriate detection levels, simple substitution of one half the parameter-specific detection level will be used to modify the data set for graphical presentation and, where necessary, to perform the statistical analyses.
- IV.C.5.b. Plots of logarithmic data, such as pH and log-transformed data, may be shown on semi-log plots to facilitate linear trend analysis.
- IV.C.5.c. Parameter values for duplicate samples will not be averaged for statistical analyses; the original value will be used, unless rejected as a result of poor quality.
- IV.C.5.d. Trend analyses are not required for monitoring parameters that have less than 10 detections in the background database.

IV.C.6. Background data base:

- IV.C.6.c. The following procedures will be used to evaluate new data for incorporation into the background dataset.
  - IV.C.6.c.i. In the event that data of questionable quality are identified, samples will either be reanalyzed or resampling will be recommended. The Quality Control (QC) and other data will be evaluated to reach decisions regarding the usability of the original data. Errors, corrections, or deletions will be reported and discussed in the annual report.
  - IV.C.6.c.ii. Descriptive statistics and trend analyses will also be used to identify data that may be of questionable quality. Notable

changes in descriptive statistics and trend analyses will prompt a review of the QC data and supporting documentation to determine what may have caused the change. When changes in descriptive statistics or trend analyses occur, QC data will be reviewed to determine whether poor data quality may have been a contributing factor.

IV.C.6.c.iii. Data that show no statistically significant difference (i.e., 95 percent level of significance) from previous background data will be included in the background database. Data that show a statistically significant difference from the background will not be included unless those data are shown to be truly valid and representative based on an evaluation of the next sampling event data.

IV.C.7. The Permittee shall perform the data evaluations and statistical procedures within 45 days after the Permittee receives the final laboratory results for the sampling event. The data must be received with sufficient time to allow its incorporation into the required reports. [6 CCR 1007-3 §264.98(f)(2)]

#### **IV.D. RECORD KEEPING AND REPORTING**

IV.D.1. The Permittee must record, as it becomes available, all monitoring, sampling, testing, and analytical data obtained in accordance with this Permit Part in the operating record. The data must include a summary of all computations (including example calculations, data for each calculation, each measured, known, or estimated value so that each calculation can be verified) required by this Permit.

IV.D.2. The Permittee must include all analytical results and the results of the statistical analyses within the Annual Report.

IV.D.2.a. The complete Annual Report shall include all data, field reports and forms, descriptions of anomalous or unexplained data, new or increased concentrations, quality control and any other problems, an evaluation of the data and its validity, and shall be submitted by no later than March 31<sup>st</sup> each calendar year.

IV.D.3. If the Permittee determines, pursuant to Permit Condition IV.C.3., there is a statistically significant increase for any of the detection monitoring parameters, the Permittee must:

IV.D.3.a. Notify the Department in writing within seven days. This notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination. [6 CCR

- IV.D.3.b. Immediately sample the groundwater in all other monitoring wells within the same unit (e.g., Upper Sandstone Unit) and determine whether background monitoring constituents are present, and if so, in what concentration. [6 CCR 1007-3 §264.98(g)(2)]
- IV.D.3.c. When the well in which the exceedance was detected has recovered sufficiently to produce a complete set of aliquots, the Permittee shall immediately resample the well from which the exceedance data was obtained and analyze for the background monitoring constituents. The results of the sample analysis shall be submitted to the Department as soon as possible, but in no case more than forty-five (45) days after collection.
- IV.D.3.c.i. If the Permittee determines that a false positive occurred, the Permittee will provide its basis and request concurrence from the Department that laboratory error or other causes may have produced a false positive. If the Department agrees the Permittee may delay implementation of the Compliance Monitoring requirements until receipt of the resample analysis.
- IV.D.3.c.ii. The Permittee shall determine whether the resampling data confirms the initial exceedance or excursion indication, and submit a written Resampling Evaluation Report to the Department within seven (7) days after receipt of the analyses. The Resampling Evaluation Report must include the basis for the determination and include the statistical analysis of the initial excursion data set and the resampling data.
- IV.D.3.c.iii. The Permittee shall implement the Contingency Plan if the resampling confirms a significant increase in a monitoring well.
- IV.D.3.c.iv. The Permittee shall follow the procedures contained in Permit Conditions IV.D.4. through IV.D.7. if the resampling confirms a significant increase in a Detection Monitoring Well.
- IV.D.4. If the resampling confirms a significant increase in a Detection Monitoring Well, the Permittee shall immediately sample the groundwater in all wells in which the significant increase occurred and all wells adjacent to the wells in which significant increases have been found. The samples shall be analyzed for all constituents in 6 CCR 1007-3 §264, Appendix IX as well as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS).

- IV.D.5. The Permittee shall establish the compliance monitoring constituent list using the Appendix IX, PFOA and PFOS groundwater analytical results. [6 CCR 1007-3 §264.98(g)(3)]
- IV.D.6. Within ninety (90) days of the resampling confirmation of a detection monitoring parameter, submit to the Department a permit modification request to establish a compliance monitoring program meeting the requirements of 6 CCR §264.99. The modification request must include the following information: [6 CCR 1007-3 §264.98(g)(4)]
- IV.D.6.a. An identification of the concentration of each Appendix IX, PFOA and/or PFOS constituent found in the groundwater at each monitoring well at the compliance point. [6 CCR 1007-3 §264.98(g)(4)(i)]
- IV.D.6.b. Any proposed changes to the groundwater monitoring system at the Facility necessary to meet the requirements of compliance monitoring as described in 6 CCR 1007-3 §264.99. [6 CCR 1007-3 §264.98(g)(4)(ii)]
- IV.D.6.c. Any proposed changes to the monitoring frequency, sampling and analysis procedures, or methods or statistical procedures at the Facility necessary to meet the requirements of compliance monitoring as described in 6 CCR 1007-3 §264.99. [6 CCR 1007-3 §264.98(g)(4)(iii)]
- IV.D.6.d. For each hazardous constituent found at the compliance point, a proposed concentration limit, or a notice of intent to seek an alternate concentration limit for a hazardous constituent. [6 CCR 1007-3 §264.98(g)(4)(iv)]
- IV.D.7. Within 180 days, submit to the Department:
- IV.D.7.a. All data necessary to justify an alternate concentration limit sought under Permit Condition IV.D.6.d. [6 CCR 1007-3 §264.98(g)(5)(i)]; and
- IV.D.7.b. An engineering feasibility plan for a corrective action program necessary to meet the requirement of §264.100 [6 CCR 1007-3 §264.98(g)(5)(ii)].
- IV.D.8. If the Permittee determines pursuant to Permit Condition IV.D.3., there is a statistically significant increase above the background values, the Permittee may demonstrate that a source other than the reconstructed cell caused the increase or that the increase resulted from error in sampling, analysis, or evaluation. In such cases, the Permittee must:

- IV.D.8.a. Notify the Department in writing within seven (7) days that the Permittee intends to make a demonstration. [6 CCR 1007-3 §264.98(g)(6)(i)]
- IV.D.8.b. Within 90 days, submit a report to the Department which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from error in sampling, analysis, or evaluation. [6 CCR 1007-3 §264.98(g)(6)(ii)]
- IV.D.8.c. Within 90 days, submit to the Department an application for a permit modification to make any appropriate changes to the detection monitoring program at the facility. [6 CCR 1007-3 §264.98(g)(6)(iii)]
- IV.D.8.d. Continue to monitor in accordance with the compliance and corrective action monitoring program at the facility. [6 CCR 1007- 3 §264.98(g)(6)(iv)]
- IV.D.9. If the Permittee has determined a statistically significant increase over the background values for any of the parameters and/or constituents identified in Table F-1 of the Permit Attachment F, in accordance with statistical procedures specified in Permit Condition IV.C.4., the Permittee must:
  - IV.D.9.a. Notify the Director, or designee, in writing, within seven (7) days. The notification must indicate what parameters or constituents have shown statistically significant increases.
  - IV.D.9.b. Immediately sample the groundwater in all wells and determine the concentration of all constituents identified in Appendix IX of 6 CCR 1007-3 §264.
  - IV.D.9.c. Establish background values for each Appendix IX constituent found in groundwater.
  - IV.D.9.d. Within ninety (90) days, submit to the Director, or designee, an application for a permit modification to establish a compliance monitoring program.
  - IV.D.9.e. Submit to the Director, or designee, a corrective action feasibility plan within 180 days.

#### **IV.E. COMPLIANCE SCHEDULE**

Within forty-five (45) days of the effective date of this Permit, the Permittee shall submit to the Department a detailed plan for the installation of at least 6 monitoring wells, 3 in the Upper Sandstone Unit and 3 in the Intermediate Sandstone Unit. At a minimum, the plan

shall include a summary of installation procedures, proposed locations, depths and screening intervals of each well, and a schedule of activities. These wells, along with the wells positioned in the Lower Sandstone Unit will make up the uppermost aquifer and will all be a component of the Facility's detection monitoring program. Additionally, the inspection and monitoring forms of Permit Attachment C shall be updated to include these new monitoring wells.

## **PART V: CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS**

### **V.A DEFINITIONS**

Any term found in the Permit will be defined as in the Colorado Hazardous Waste Regulations.

### **V.B SUMMARY OF RFA FINDINGS/RESULTS**

The following Solid Waste Management Units (SWMUs) were identified by the Director during the RCRA Facility Assessment (RFA):

#### **SWMU NO. 1: Reconstructed Waste Disposal Cell**

The Reconstructed Cell is comprised of a southern clean closed surface impoundment (pond 3) and two reconstructed disposal cells (ponds 1 and 2) north of the clean closed surface impoundment. Pond 3 was clean closed and no further action is required under the Corrective Action provisions of this Permit.

Post-closure care of the reconstructed cell will be conducted in accordance with this Permit. As such, no further action is required at this unit under the Corrective Action provisions of this Permit.

#### **SWMU NO. 2: Section 32 Municipal Sludge Disposal Area**

Municipal sludge disposal farming operations occurred on the land in Section 32 of Township 4 South, Range 65 West in which the facility is located. The Director's RFA indicated the possible disposal of hazardous waste or Appendix VIII hazardous constituents (6 CCR 1007-3; Section 261) at the municipal sludge disposal farming areas. These constituent concentrations were evaluated as part of the clean closure equivalency demonstration. No further action is required under the Corrective Action provisions of this Permit.

### **V.C NOTIFICATION REQUIREMENTS FOR NEWLY-DISCOVERED RELEASES AT SWMUs**

The Permittee must notify the Director or designee, in writing, of any newly discovered release(s) of hazardous waste including hazardous constituents discovered at the facility during the course of ground-water monitoring, field investigation, environmental auditing, or other activities, no later than fifteen (15) calendar days after discovery. Such

newly-discovered releases may be from newly-identified units, or from units for which, based on the findings of the RFA, the Director had previously determined that no further investigation was necessary. After such notification, the Director may request, in writing, that the Permittee prepare a plan to further investigate the newly-identified release(s) and a proposed schedule of implementation and completion of such plan.

**Attachment A**

# Colorado Hazardous Waste Notification RCRA Part A Permit Application

**MAIL FORM TO:**

CDPHE

HMWMD-B2

4300 Cherry Creek Dr. S.

Denver, CO 80246-1530

**COLORADO HAZARDOUS WASTE****NOTIFICATION FORM**

Replaces EPA Form 8700-12, 8700-13A/B, and Page 1 of 8700-23



Colorado Department  
of Public Health  
and Environment

**1. Reason for Submittal: (Mark 'X' in the appropriate boxes)**

- ☐ Initial notification and obtain an EPA ID Number for hazardous waste, universal waste, or used oil activities.
- ☒ Subsequent notification to update information (**Sec. 2-6 and 10 must be completed**).
- ☐ Initial or Revised RCRA Hazardous Waste Part A Permit Application (Page 3-7 of 8700-23 must also be submitted).
- ☐ Component of a biennial Hazardous Waste Report and a subsequent notification.

**2. Site EPA ID Number:** COD000695007

County Name: ARAPAHOE

**3. Site Legal Name/Operator:** DACWPF RECONSTRUCTED CELL FACILITY/WASTE MANAGEMENT OF COLORADO, INC.**4. Site Location Information:** Street Address: 25700 E. YALE AVE.

City or Town: AURORA

State: CO

Zip Code: 80014

**5. Site Land Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other**6. North American Industry Classification System (NAICS) Code(s) for the Site:**

A. 562211

B.

C.

**7. Site Mailing Address** Same as ☐ Location Street Address: 2400 W. UNION AVENUE

City or Town: ENGLEWOOD

State: CO

Zip Code: 80110

**8. Site Contact Person**

First Name: TOM

MI: S.

Last Name: SCHWEITZER

Job Title: SENIOR ENGINEER

Phone Number: (303) 914-1445

Extension:

Address same as ☐ Location ☒ Mailing  
Street Address:

City or Town:

State:

Zip Code:

E-mail Address:

**9. Name of Site's Owner:**

Phone Number:

Address same as ☐ Location ☒ Mailing ☐ Contact  
Owners Street Address:

City or Town:

State:

Zip Code:

**Owner Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other**10. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes for all current activities in Sections 10. A-C).****A. Hazardous Waste Activities** For Items 3 through 7, check all that apply:**1. Generator of Hazardous Waste** (regular monthly generation rate/choose only one)

- ☐ a. **LQG:** Greater than 1,000 kg/mo (2,200 lbs.) of non-acute hazardous waste; or
- ☐ b. **SQG:** 100 to 1,000 kg/mo (220 - 2,200 lbs.) of non-acute hazardous waste; or
- ☐ c. **CESQG:** Less than 100 kg/mo of non-acute hazardous waste

**NOTE:** The Department recommends that a facility that episodically or sporadically generates more waste than their regular monthly generation rate allows notify at the larger generator status in order to maintain a consistent waste management system and avoid continual re-notification.

**2. One-Time Generation** (not normally a hazardous waste generator or one-time exceedance of regular monthly generation rate)

☐ Large Quantity Generator; or ☐ Small Quantity Generator; or ☐ Conditionally Exempt Generator

**NOTE:** A one-time generator number is active for only one month. If the facility needs to keep their number active for more than one month or if they exceed their regular generation rate for more than one month, they should check the appropriate box in 10.A.1 and notify the Department when the number is no longer needed or they return to their regular monthly generation rate.

**3. United States Importer of Hazardous Waste** ☐**4. Mixed Waste Generator** (hazardous and radioactive) ☐

**A. Hazardous Waste Activities (continued)**

- ☐ 5. Transporter of Hazardous Waste
- ☐ 6. Hazardous Waste Transfer Facility
- ☒ 7. Treater, Storer, or Disposer of Hazardous Waste requiring a hazardous waste Part A permit for this activity.
- ☐ 8. Recycler of Hazardous Waste  
Note: A hazardous waste permit may be required for this activity.
9. Exempt Boiler and/or Industrial Furnace
- ☐ a. Small Quantity On-site Burner Exemption
- ☐ b. Smelting, Melting, Refining Furnace Exemption
- ☐ 10. Underground Injection Control

**B. Universal Waste Activities****1. Large Quantity Handler of Universal Waste**

Indicate types of universal waste generated and/or consolidated at your site. Mark Consolidated if received from other Universal Waste Handlers. (check all boxes that apply):

**Generated      Consolidated**

- |   |                          |                          |
|---|--------------------------|--------------------------|
| a. Aerosol Cans                         | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Electronic Devices and/or Components | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Mercury-containing Devices           | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Batteries                            |                          | <input type="checkbox"/> |
| e. Lamps                                |                          | <input type="checkbox"/> |
| f. Pesticides                           |                          | <input type="checkbox"/> |
| g. Mercury-containing equipment         |                          | <input type="checkbox"/> |

☐ **2. Destination Facility for Universal Waste**

Note: A hazardous waste permit may be required for this activity.

**C. Used Oil Activities (check all boxes that apply):**

- |   |  |   |
|---|--|---|
| 1. Used Oil Transporter                                       | <input type="checkbox"/> a. Transporter  | <input type="checkbox"/> b. Transfer Facility |
| 2. Used Oil Processor and/or Re-refiner                       | <input type="checkbox"/> a. Processor  | <input type="checkbox"/> b. Re-refiner        |
| <input type="checkbox"/> 3. Off-Specification Used Oil Burner | <input type="checkbox"/> 5. Used Oil Collection Center   |   |
| 4. Used Oil Fuel Marketer                                     | <input type="checkbox"/> a. Marketer Who Directs Shipment of Off-Spec. Used Oil to an Off-Spec. Used Oil Burner<br><input type="checkbox"/> b. Marketer Who First Claims the Used Oil Meets the Specifications |   |

**11. Description of Hazardous Wastes** List waste codes of the hazardous wastes handled at your site. List in order presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if needed.

Ignitable (D001) ☐ Corrosive (D002) ☐ Reactive (D003) ☐ Toxic ☐ (List specific codes below)

See comments below

**12. Comments**

The facility is closed. The only remaining regulated unit is an evaporation ponds waste management unit that was closed as a reconstructed disposal cell. The entire waste stream inventory placed into the evaporation pond and the drum burial cell during operation of the Denver-Arapahoe Chemical Waste Processing Facility was attached to the Part A Application delivered to the Colorado Department of Health and Environment on February 28, 1992. The facility is handling delisted F039 wastes pursuant to Conditional Delisting.

**13. Certification.** I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of owner, operator, or an authorized representative

Name and Official Title (type or print)

Date Signed

Scott Bradley, President  
Waste Management of Colorado, Inc.

4/25/19

## HAZARDOUS WASTE PERMIT PART A FORM



## 1. Facility Permit Contact

First Name

MILast NameTitleEmailPhoneExtFax

## 2. Facility Permit Contact Mailing Address

Street Address

City, Town, or VillageStateCountryZip Code

### 3. Facility Existence Date (mm/dd/yyyy)

\_\_\_\_\_

#### 4. Other Environmental Permits

### A. Permit Type

B. Permit Number

### C. Description

[illegible]

## 5. Nature of Business


## 6. Process Codes and Design Capacities

Line Number		A. Process Code			B. Process Design Capacity		C. Process Total Number of Units	D. Unit Name
					(1) Amount	(2) Unit of Measure		

**7. Description of Hazardous Wastes** (Enter codes for Items 7.A, 7.C and 7.D(1) )

[illegible]

## 8. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

## 9. Facility Drawing

All existing facilities must include a scale drawing of the facility. See instructions for more detail.

## 10. Photographs

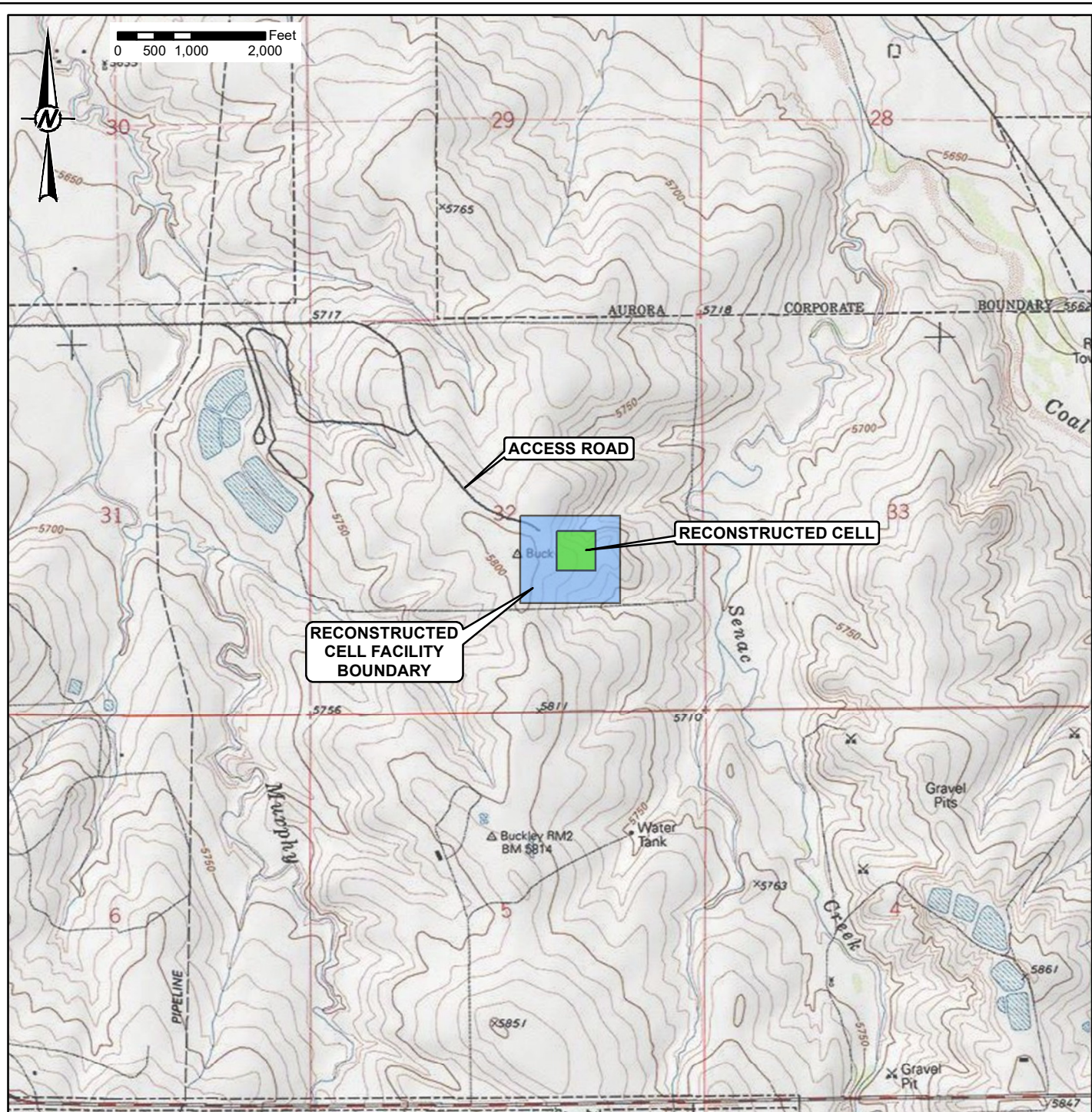
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas. See instructions for more detail.

## 11. Comments


**Attachment A-1**

## Figures

PATH: M:\wms\management\DACWPF\Map\18111727\_00108\_5x11\_18111727\_Figure01\_SiteVicinity.mxd PRINTED ON: 2018-02-26 AT: 1:58:10 PM



**LEGEND**

- RECONSTRUCTED CELL
- RECONSTRUCTED CELL FACILITY BOUNDARY

**REFERENCE**

1. BASEMAP: ESRI BASEMAP SERVICES, USGS. 1:24,000 SCALE QUADRANGLE SHOWN: "COAL CREEK, CO".

**CLIENT**

WASTE MANAGEMENT OF COLORADO, INC.

**PROJECT**

DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

**TITLE**

**SITE VICINITY MAP**

**CONSULTANT**



YYYY-MM-DD	2019-02-25
DESIGNED	KJC
PREPARED	KJC
REVIEWED	MDC
APPROVED	RM

**PROJECT NO.**

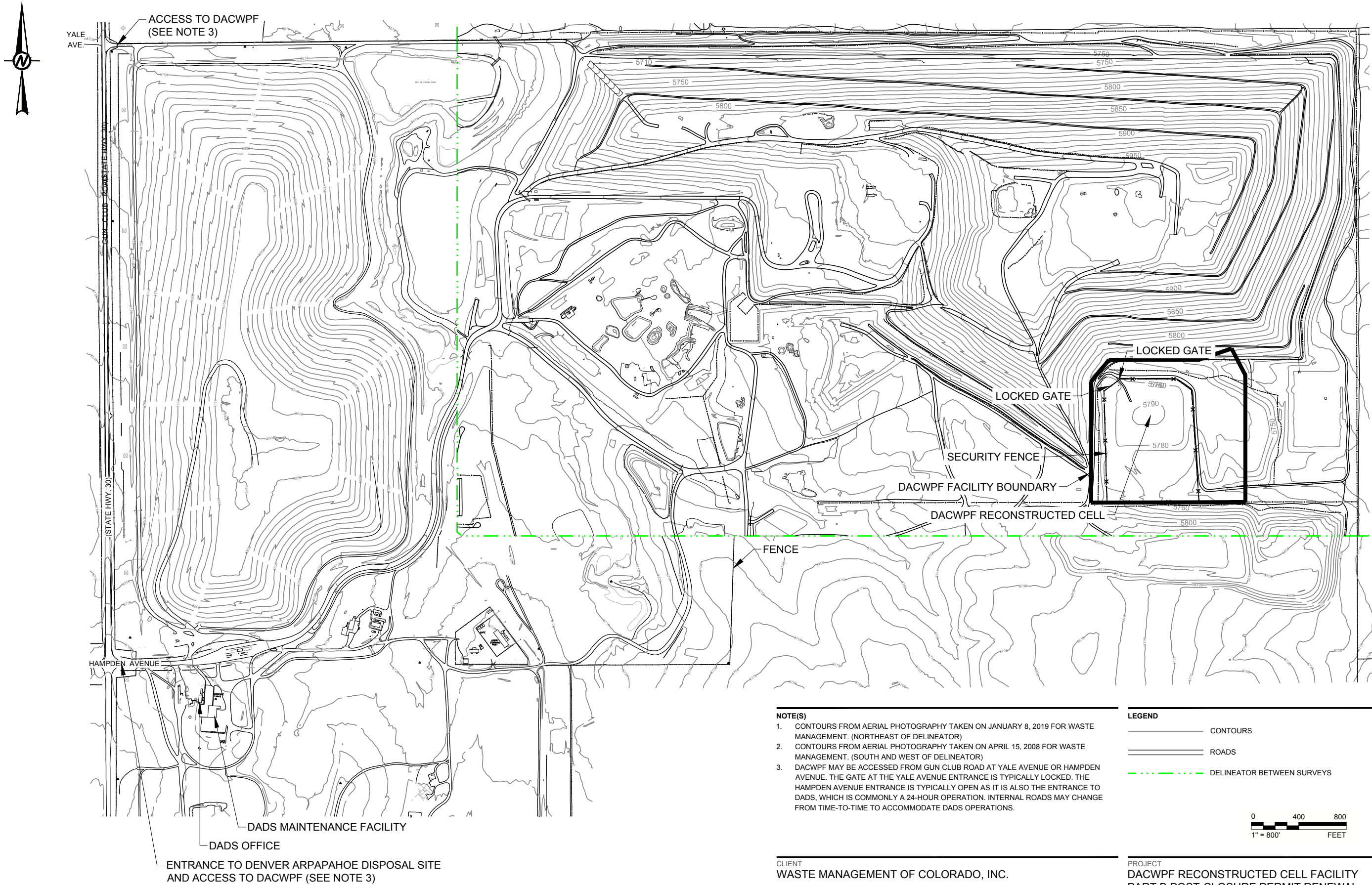
18111727

**FIGURE**

1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI/A 25mm

P:\01-Denver\01-000\WASTE MANAGEMENT\DACWPF\098\_PROJECTS\18111727\001\_RECONSTRUCTED\_CELL\_FACILITY\02\_PRODUCT\DWG\01 File Name: 18111727\_001\_002.dwg | Last Edited By: dsauers Date: 2019-02-27 Time: 3:49:29 PM | Printed By: dsauers Date: 2019-02-27 Time: 3:49:50 PM



NOTE(S)

1. CONTOURS FROM AERIAL PHOTOGRAPHY TAKEN ON JANUARY 8, 2019 FOR WASTE MANAGEMENT. (NORTHEAST OF DELINEATOR)
2. CONTOURS FROM AERIAL PHOTOGRAPHY TAKEN ON APRIL 15, 2008 FOR WASTE MANAGEMENT. (SOUTH AND WEST OF DELINEATOR)
3. DACWPF MAY BE ACCESSED FROM GUN CLUB ROAD AT YALE AVENUE OR HAMPDEN AVENUE. THE GATE AT THE YALE AVENUE ENTRANCE IS TYPICALLY LOCKED. THE HAMPDEN AVENUE ENTRANCE IS TYPICALLY OPEN AS IT IS ALSO THE ENTRANCE TO DADS, WHICH IS COMMONLY A 24-HOUR OPERATION. INTERNAL ROADS MAY CHANGE FROM TIME-TO-TIME TO ACCOMMODATE DADS OPERATIONS.

LEGEND

- CONTOURS
- ROADS
- DELINEATOR BETWEEN SURVEYS

CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

CONSULTANT	YYYY-MM-DD	2019-02-27
	DESIGNED	RM
	PREPARED	DBS
	REVIEWED	MEM
	APPROVED	RM



TITLE  
IMMEDIATE VICINITY MAP

PROJECT NO.  
18111727

REV.  
A



**LEGEND**

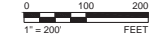
- 5780 2019 CONTOURS
- ROADS
- PROPERTY BOUNDARY

**P-107 GC-18**

- EXISTING GROUNDWATER MONITORING NETWORK
- I-1 UPPER AND INTERMEDIATE SANDSTONE WELLS TO BE INSTALLED IF NECESSARY
- BM-1A BENCHMARK LOCATIONS

**NOTE(S)**

1. CONTOURS FROM AERIAL PHOTOGRAPHY TAKEN ON JANUARY 8, 2019 FOR WASTE MANAGEMENT.



CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

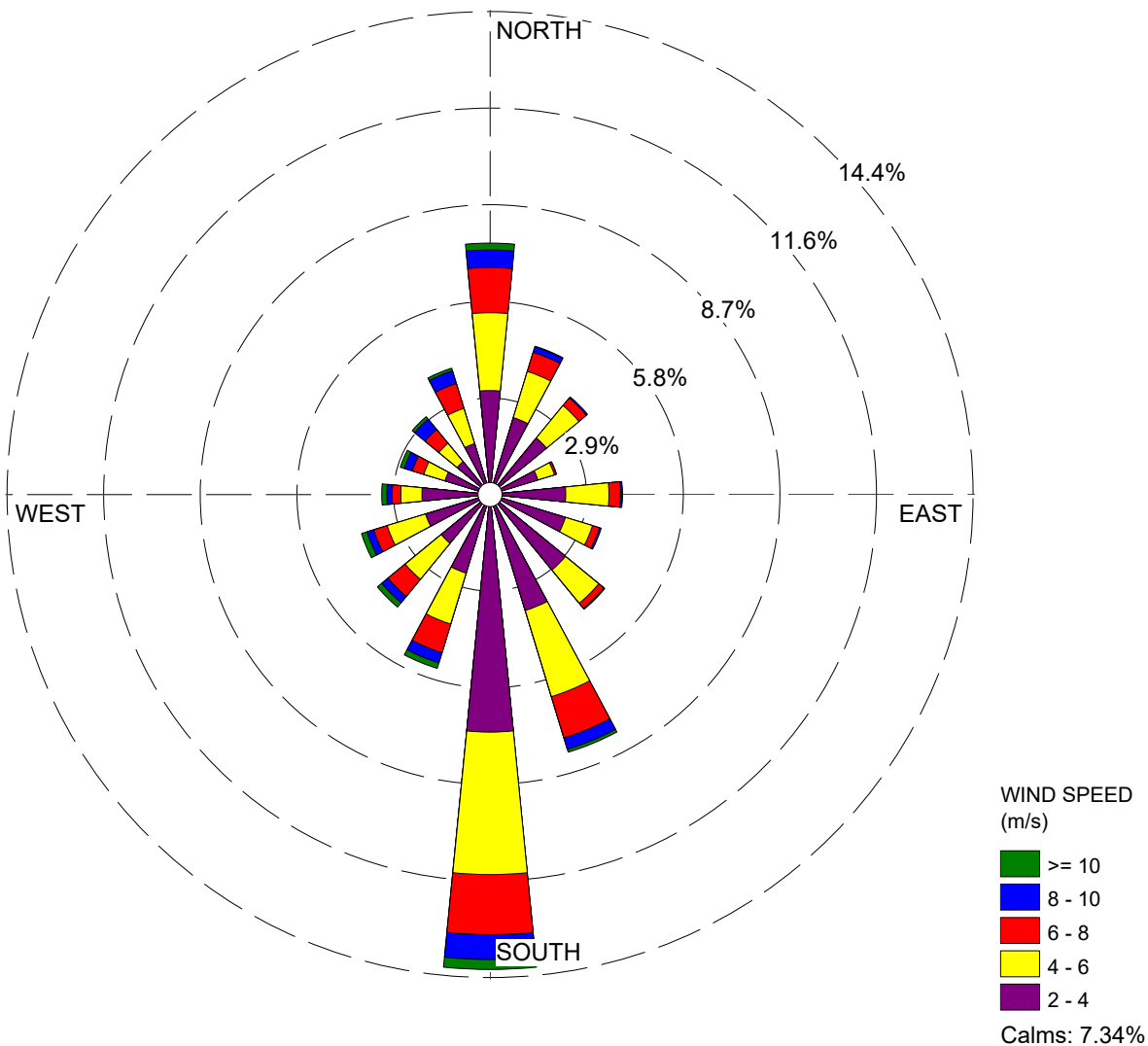
CONSULTANT	YYYY-MM-DD	2019-02-27
DESIGNED	RM	
PREPARED	DBS	
REVIEWED	MEM	
APPROVED	RM	



TITLE FACILITY MAP	REV. A
PROJECT NO. 18111727	

WIND ROSE PLOT:  
**Centennial Airport Wind Rose**  
 Jan 1 - Dec 31, 2018

DISPLAY:  
**Wind Speed**  
**Direction (blowing from)**



PROJECT:  
**DACWPF  
 RECONSTRUCTED  
 CELL FACILITY PART B  
 POST-CLOSURE  
 PERMIT RENEWAL**

TITLE:  
**SITE WIND ROSE  
 DIAGRAM**

February 26, 2019

DATA PERIOD:  
**2018**  
**Jan 1 - Dec 31**  
**00:00 - 23:00**

CALM WINDS:  
**7.34%**

AVERAGE WIND SPEED:  
**3.66 meters/second**

CLIENT:  
**WASTE MANAGEMENT OF COLORADO, INC.**

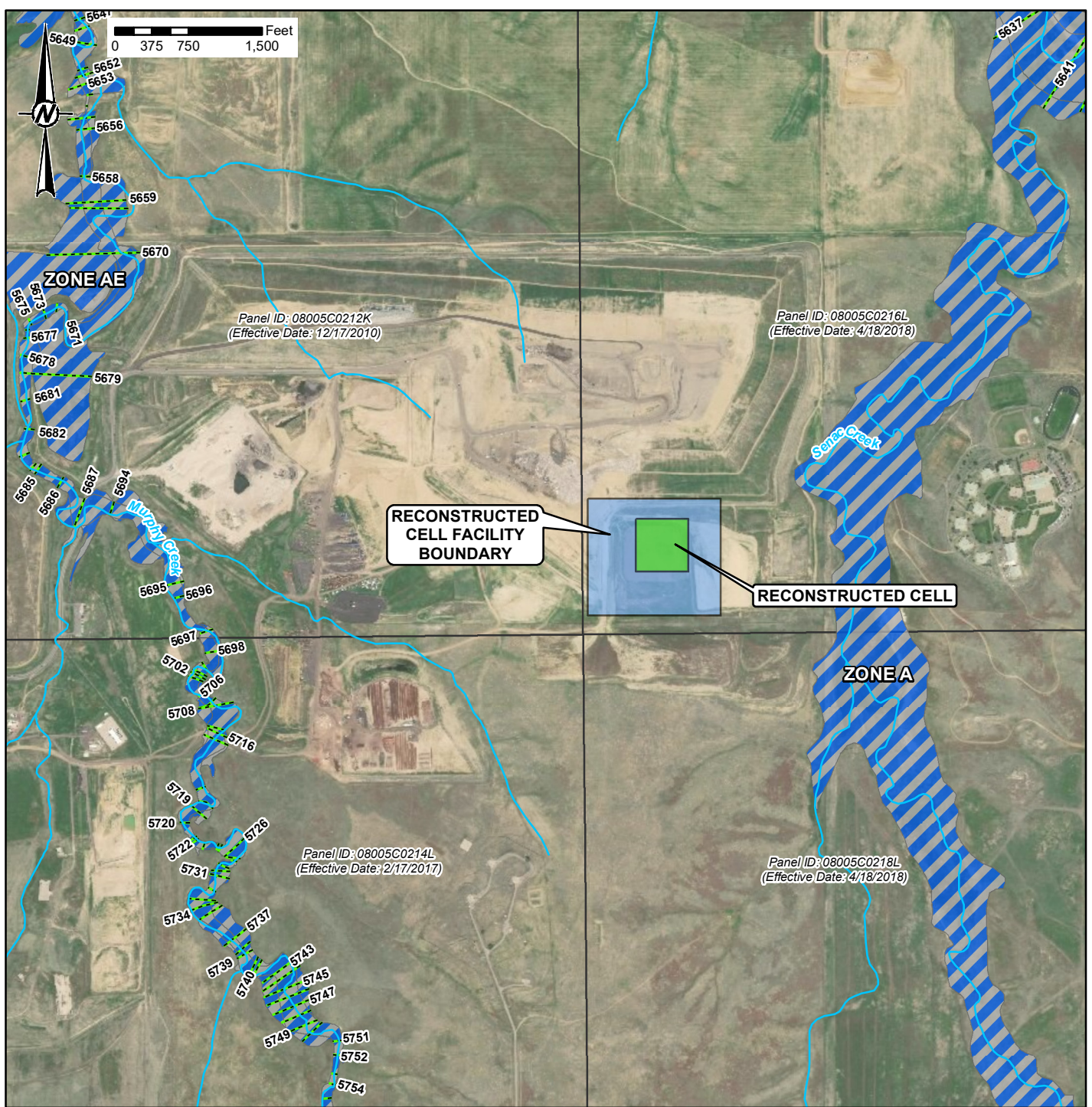
DESIGNED: MC  
 PREPARED: MC  
 REVIEWED: RM  
 APPROVED: RM

TOTAL COUNT:  
**8757 hrs.**

**FIGURE 4**

PROJECT NO.:  
**18111727**





#### LEGEND

- RECONSTRUCTED CELL
- RECONSTRUCTED CELL FACILITY BOUNDARY
- STREAM
- BASE FLOOD ELEVATION (ft amsl)

#### FEMA FLOOD ZONE

- 100-YEAR FLOODPLAIN

#### NOTES

1. ZONE A = AN AREA INUNDATED BY 1% ANNUAL CHANCE FLOODING, FOR WHICH NO BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.
2. ZONE AE = AN AREA INUNDATED BY 1% ANNUAL CHANCE FLOODING, FOR WHICH BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.

#### REFERENCES

1. AERIAL IMAGERY: ESRI, DIGITAL GLOBE, VIVID. IMAGERY CAPTURED JUNE 2017.
2. FLOODPLAINS, BASE FLOOD ELEVATIONS, AND STREAMS: DIGITAL FLOOD INSURANCE RATE MAPS (DFIRMS), FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA). PANELS AND EFFECTIVE DATES LABELED ON MAP.

#### CLIENT

WASTE MANAGEMENT OF COLORADO, INC.

#### PROJECT

DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

#### TITLE

FEMA FLOODPLAIN MAP

#### CONSULTANT

YYYY-MM-DD	2019-02-21
DESIGNED	KJC
PREPARED	KJC
REVIEWED	MC
APPROVED	



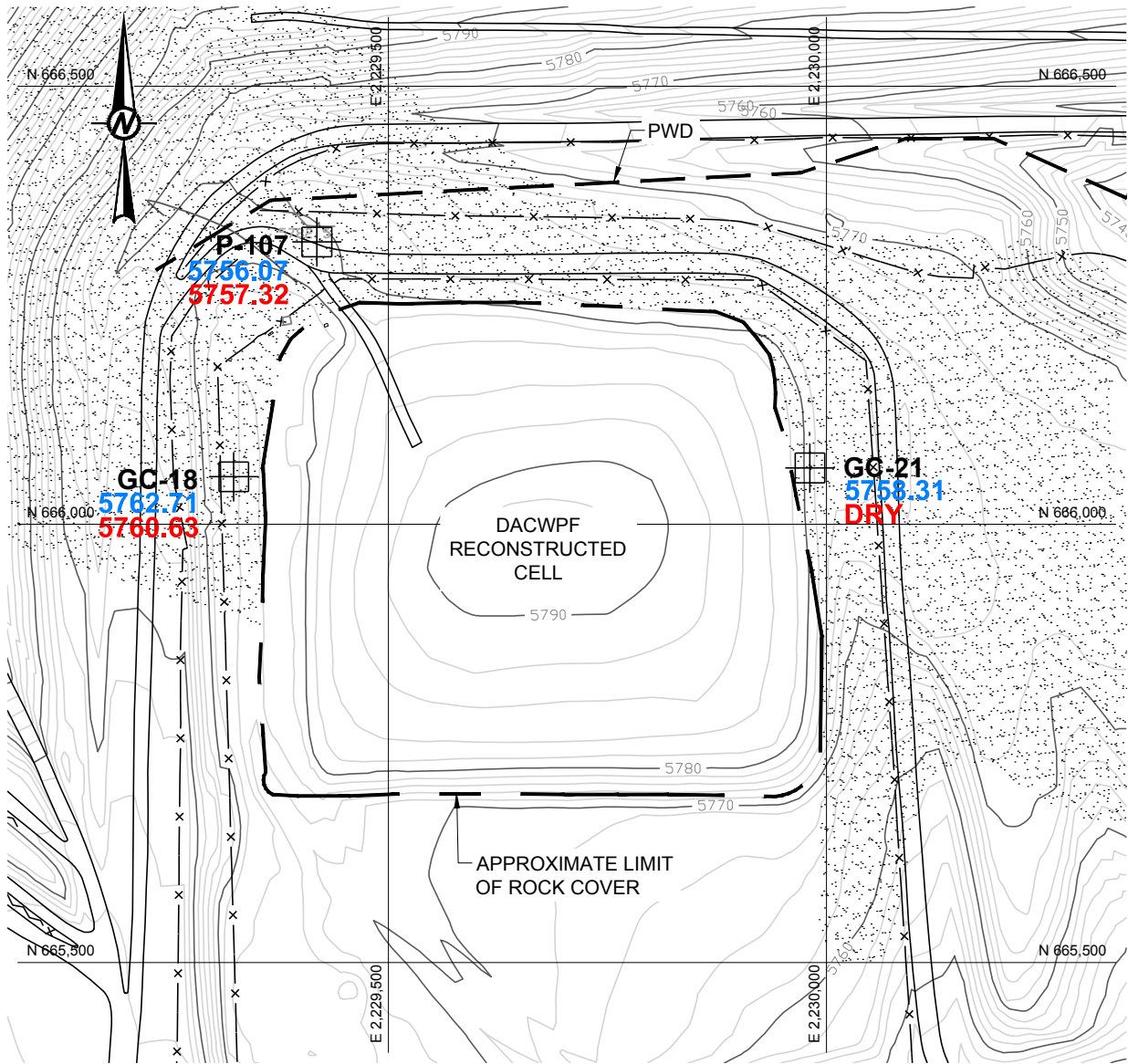
**GOLDER**

#### PROJECT NO.



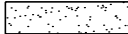
18114678

#### FIGURE

5

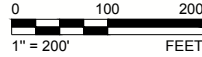


LEGEND

-  PIEZOMETER
-  PERCHED WATER DRAIN (PWD)
-  APPROXIMATE EXTENT OF SILTY SANDSTONE (SM) IN UPPER SANDSTONE UNIT

NOTE(S)

1. WATER LEVELS SHOWN IN **BLUE** MEASURED ON 05/09/2018.
2. WATER LEVELS SHOWN IN **RED** MEASURED ON 10/31/2018.
3. ELEVATION GIVEN IN FEET ABOVE MEAN SEA LEVEL.



CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

CONSULTANT

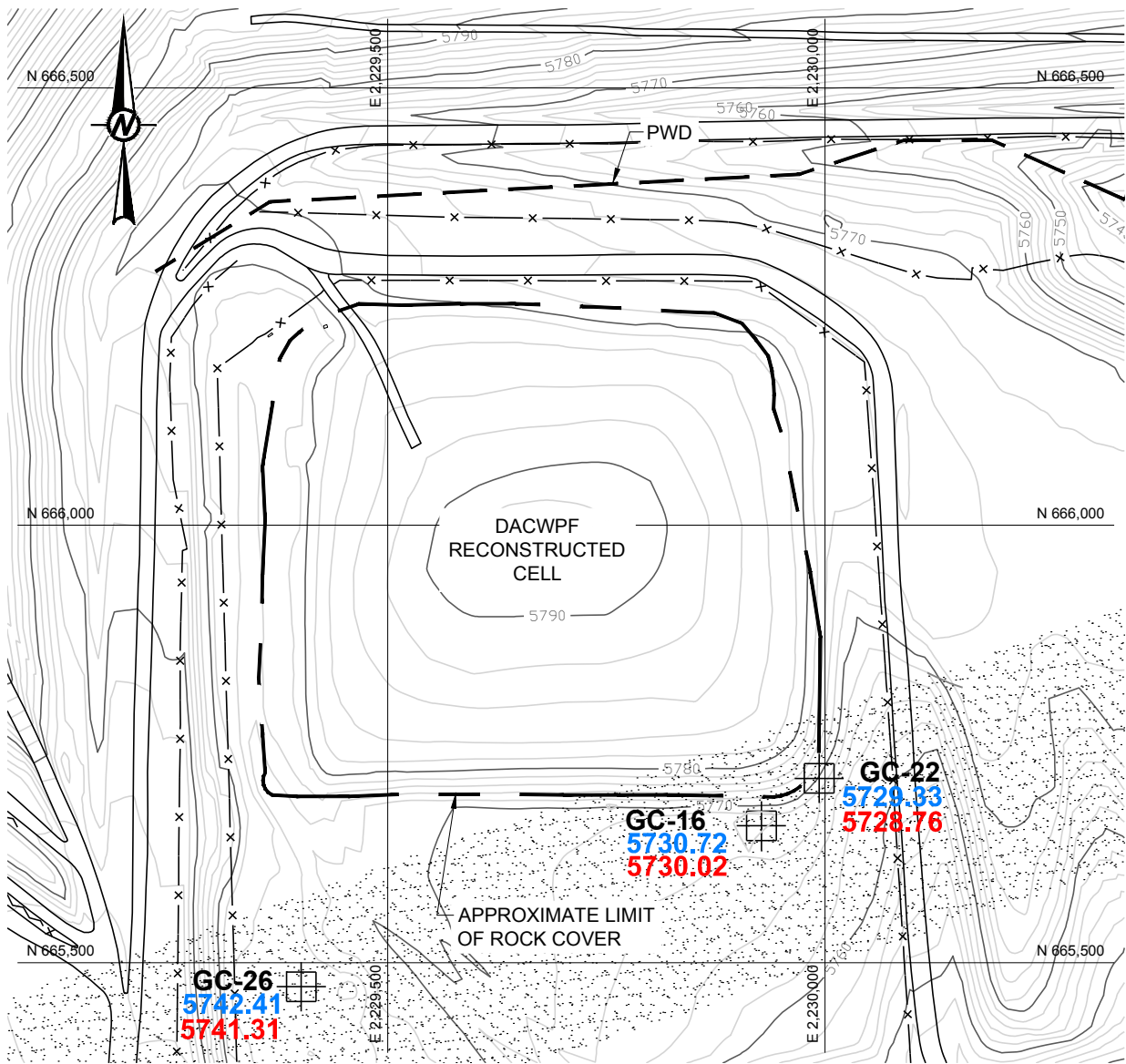
YYYY-MM-DD	2019-02-27
DESIGNED	MDC
PREPARED	DBS
REVIEWED	MEM
APPROVED	RM





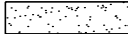
TITLE  
**GROUNDWATER MONITORING NETWORK AND WATER LEVELS  
IN UPPER SANDSTONE AND ADJACENT STRATIGRAPHIC UNITS**

PROJECT NO.  
18111727

REV.  
A

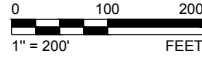


LEGEND

-  PIEZOMETER
-  PERCHED WATER DRAIN (PWD)
-  APPROXIMATE EXTENT OF SILTY SANDSTONE (SM) IN INTERMEDIATE SANDSTONE UNIT

NOTE(S)

1. WATER LEVELS SHOWN IN **BLUE** MEASURED ON 05/09/2018.
2. WATER LEVELS SHOWN IN **RED** MEASURED ON 10/31/2018.
3. ELEVATION GIVEN IN FEET ABOVE MEAN SEA LEVEL.



CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

CONSULTANT

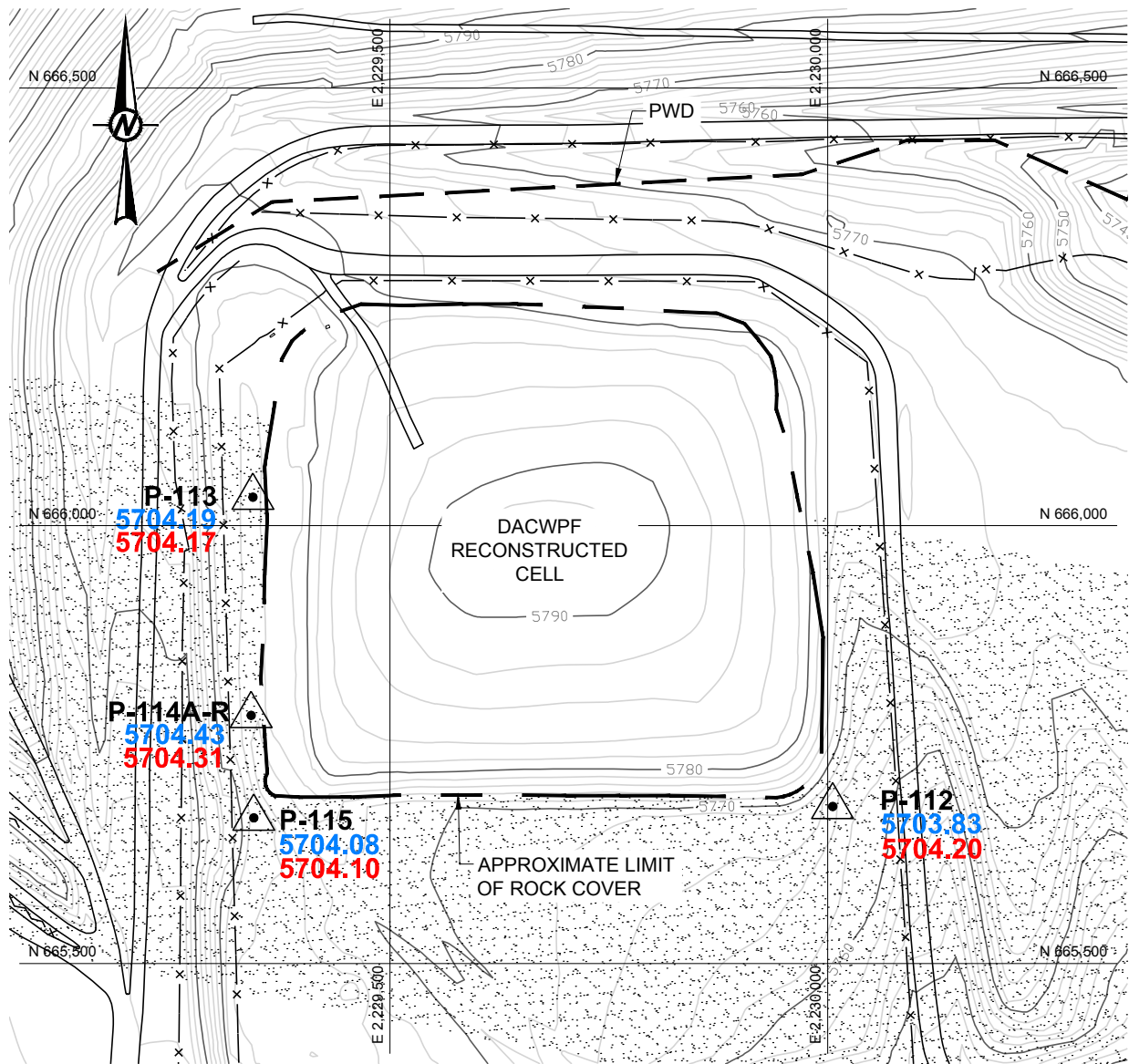
YYYY-MM-DD	2019-02-27
DESIGNED	MDC
PREPARED	DBS
REVIEWED	MEM
APPROVED	RM





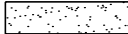
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**GROUNDWATER MONITORING NETWORK AND WATER LEVELS  
IN INTERMEDIATE SANDSTONE AND ADJACENT  
STRATIGRAPHIC UNITS**

PROJECT NO.  
18111727

REV.  
A



LEGEND

-  PIEZOMETER
-  PERCHED WATER DRAIN (PWD)
-  APPROXIMATE EXTENT OF SILTY SANDSTONE (SM) IN LOWER SANDSTONE UNIT

NOTE(S)

1. WATER LEVELS SHOWN IN **BLUE** MEASURED ON 05/09/2018.
2. WATER LEVELS SHOWN IN **RED** MEASURED ON 10/31/2018.
3. ELEVATION GIVEN IN FEET ABOVE MEAN SEA LEVEL.



CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

CONSULTANT



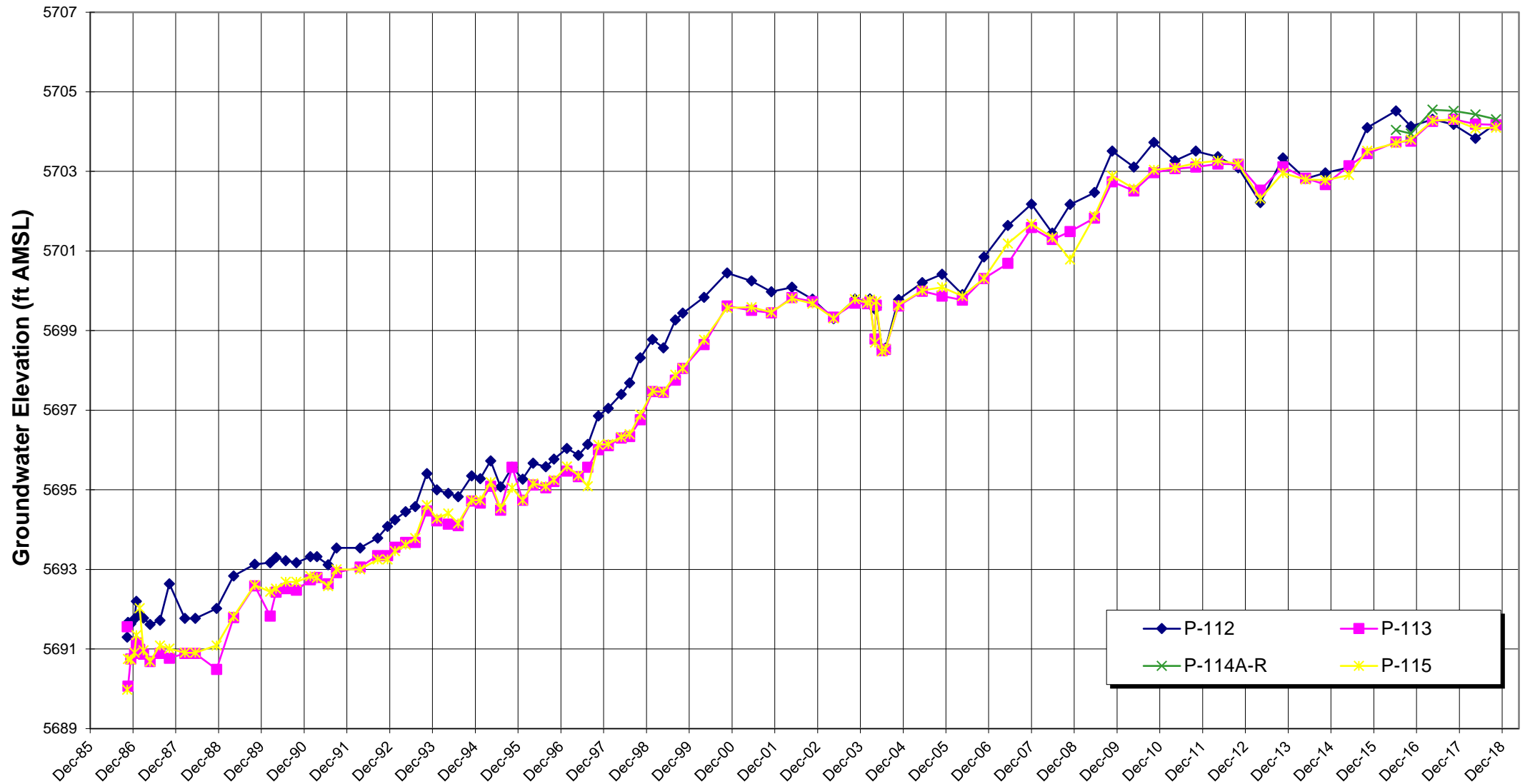
YYYY-MM-DD	2019-02-27
DESIGNED	MDC
PREPARED	DBS
REVIEWED	MEM
APPROVED	RM

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

TITLE  
**GROUNDWATER MONITORING NETWORK AND WATER LEVELS  
IN LOWER SANDSTONE AND ADJACENT STRATIGRAPHIC  
UNITS**

PROJECT NO.  
18111727

REV.  
A



44 UNION BLVD. SUITE 300  
LAKEWOOD, COLORADO 80228  
PHONE: (303) 980-0540  
FAX: (303) 985-2080

### RCRA MONITORING WELLS (LOWER SANDSTONE) GROUNDWATER LEVELS

#### DACWPF RECONSTRUCTED CELL FACILITY PART B POST-CLOSURE PERMIT RENEWAL

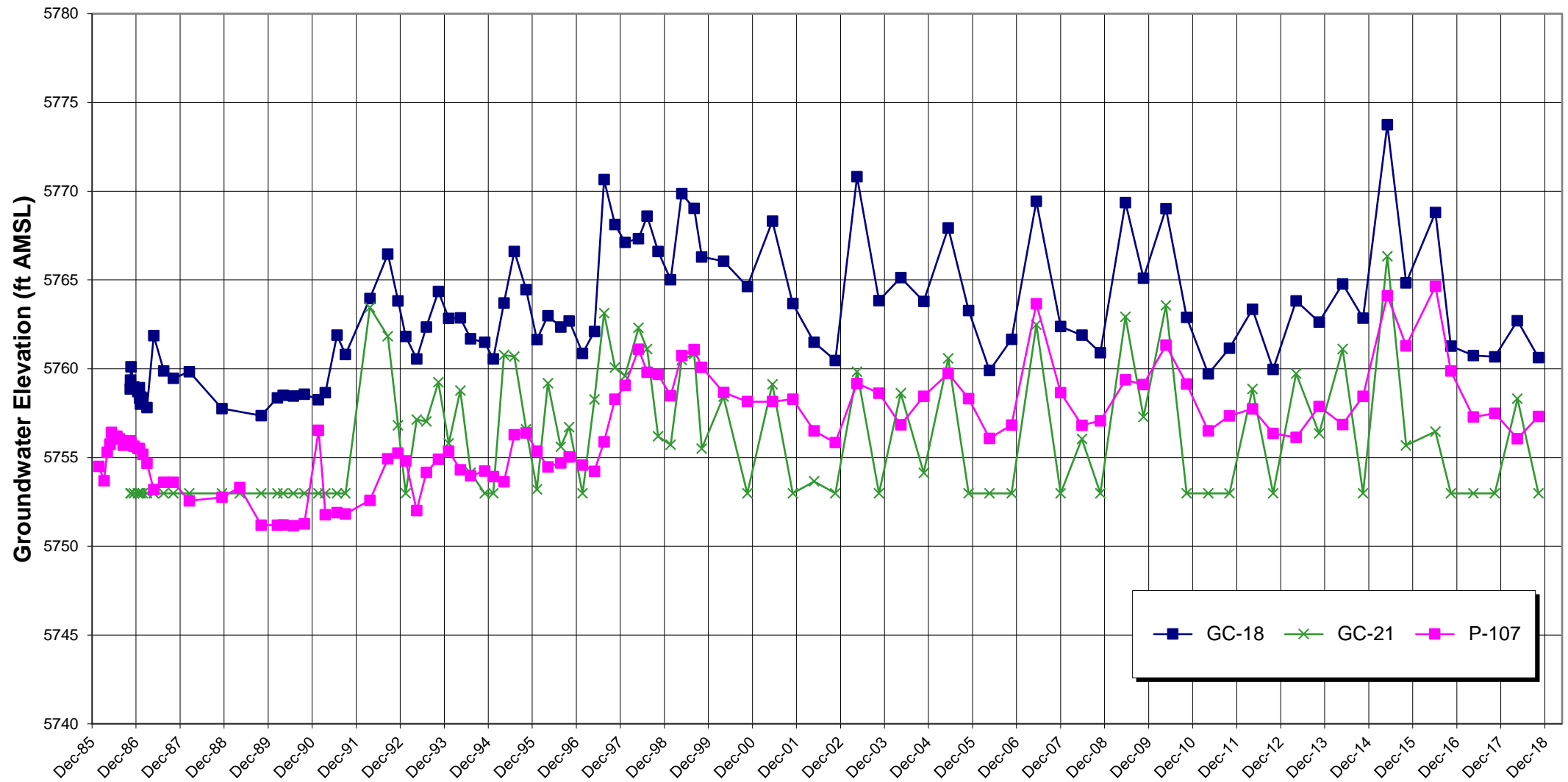
Drawn MC  
Checked SH  
Reviewed RM

February 25, 2019

WASTE MANAGEMENT OF  
COLORADO, INC.

18111727

**FIGURE 9**



44 UNION BLVD. SUITE 300  
LAKEWOOD, COLORADO 80228  
PHONE: (303) 980-0540  
FAX: (303) 985-2080

### UPPER SANDSTONE UNIT GROUNDWATER LEVELS

#### DACWPF RECONSTRUCTED CELL FACILITY PART B POST-CLOSURE PERMIT RENEWAL

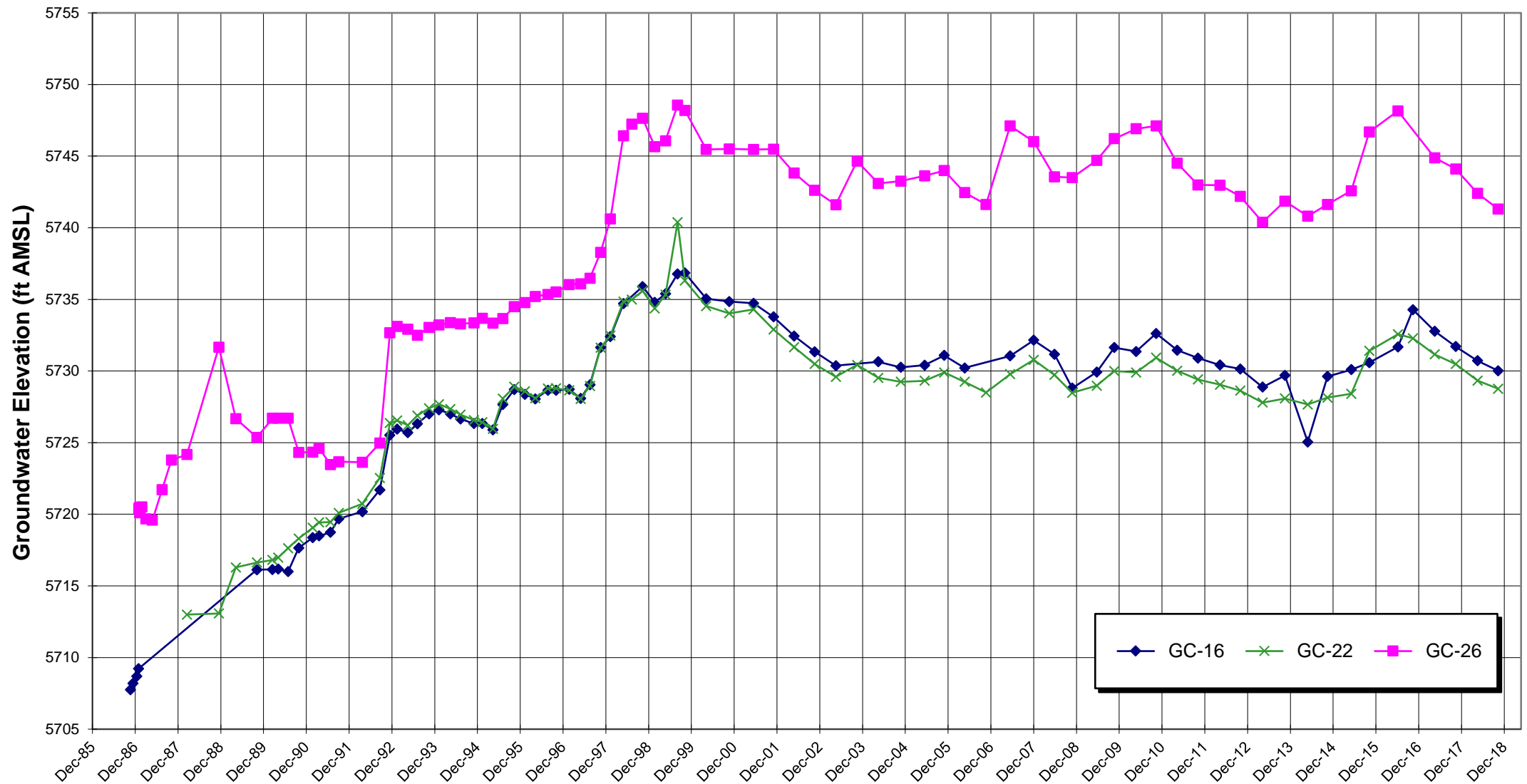
Drawn MC  
Checked SH  
Reviewed RM

February 25, 2019

18111727

WASTE MANAGEMENT OF  
COLORADO, INC.

**FIGURE 10**



44 UNION BLVD. SUITE 300  
LAKEWOOD, COLORADO 80228  
PHONE: (303) 980-0540  
FAX: (303) 985-2080

### INTERMEDIATE SANDSTONE UNIT GROUNDWATER LEVELS

#### DACWPF RECONSTRUCTED CELL FACILITY PART B POST-CLOSURE PERMIT RENEWAL

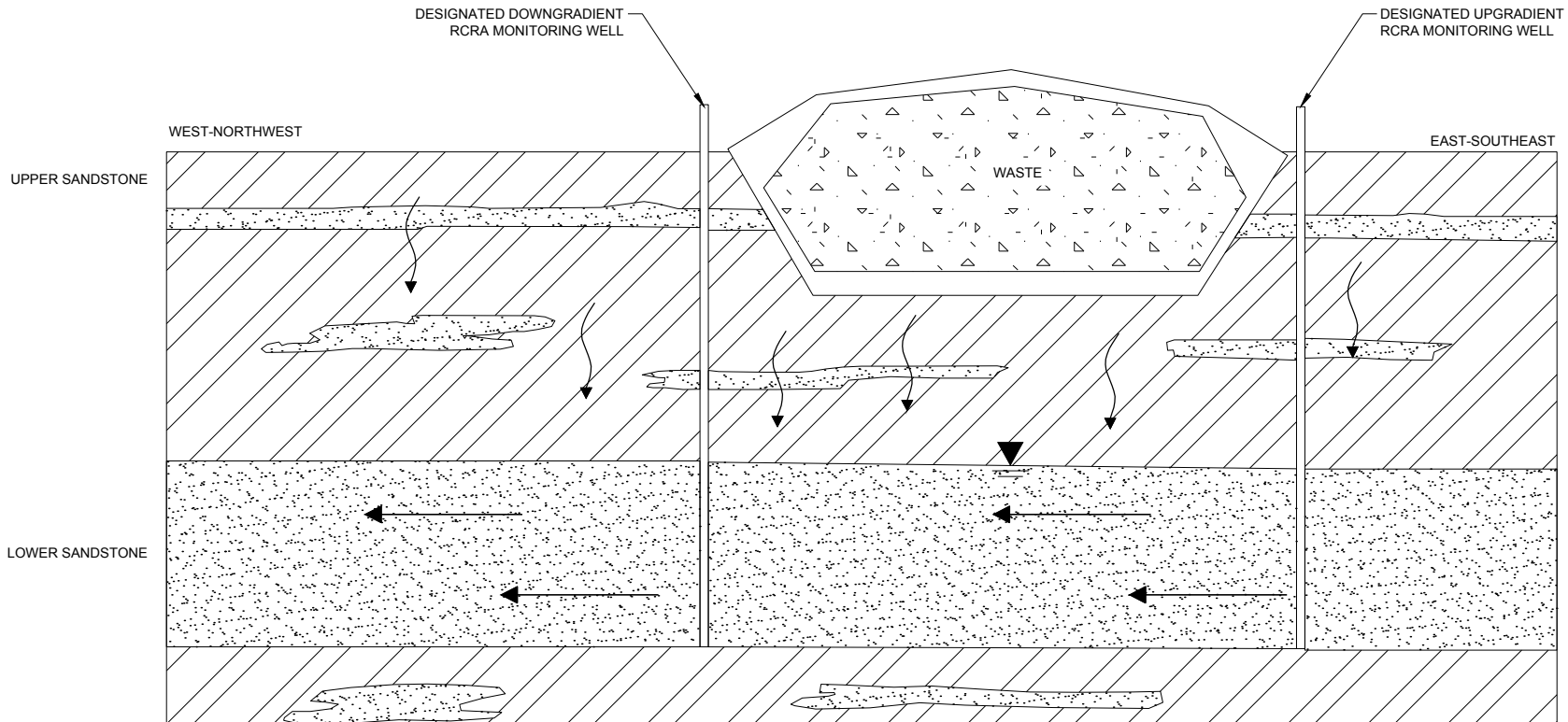
Drawn MC  
Checked SH  
Reviewed RM

February 25, 2019

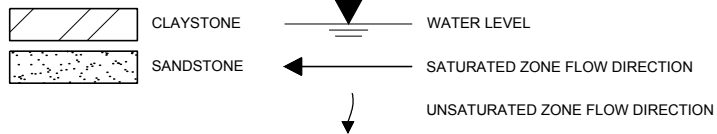
WASTE MANAGEMENT OF  
COLORADO, INC.

18111727

**FIGURE 11**



LEGEND



NOTE(S)

1. INTERMEDIATE SANDSTONE AS DESCRIBED IN GOLDER (1986) EXISTS ONLY BENEATH THE SOUTH-EASTERN CORNER OF THE RECONSTRUCTED CELL AND IS NOT DEPICTED IN THIS CROSS SECTION.

CLIENT  
WASTE MANAGEMENT OF COLORADO, INC.

CONSULTANT



YYYY-MM-DD	2019-02-27
DESIGNED	RM
PREPARED	DBS
REVIEWED	MEM
APPROVED	RM

PROJECT  
DACWPF RECONSTRUCTED CELL FACILITY  
PART B POST-CLOSURE PERMIT RENEWAL

TITLE  
**SCHEMATIC HYDROGEOLOGIC CROSS SECTION**

PROJECT NO.  
18111727

REV.  
A

**Attachment A-2**

## 2015 Class 1 Permit Modifications



## COLORADO

Department of Public  
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

May 26, 2015

Mr. Tom Schweitzer, P.E.  
Engineering Manager  
Waste Management of Colorado  
2400 W. Union Avenue  
Englewood, CO 80110

Subj: Class 1 Permit Modification Request  
DACWPF Reconstructed Cell Facility, Arapahoe County, CO  
State RCRA Permit #CO-09-30-09-01

Dear Mr. Schweitzer,

The Hazardous Materials and Waste Management Division ("the Division") of the Colorado Department of Public Health and Environment has reviewed the Class 1 Modification Request dated May 18, 2015 and received by the Division on May 19, 2015 by email. The Division approves the Modification Request as submitted and the changes have been incorporated into the permit. A copy of the modifications shall be sent by the Facility to all persons on the current mailing list pursuant to 100.63(a)(1)(ii).

If you have any questions or need additional information, please contact me at 303-692-3310 or by email at [charles.adams@state.co.us](mailto:charles.adams@state.co.us).

Best Regards,

Charles Adams, CPG  
Hazardous Waste Corrective Action Unit  
Solid & Hazardous Waste Program

ec:

Tom Butts, Director of Environmental Health, Tri-County Health Department  
Rob Beierle, CDPHE/HMWMD



Class 1 Permit Modification Request  
May 18, 2015



2400 West Union Avenue  
Englewood, CO 80110  
303-914-1445 (Phone)  
866-442-0285 (Fax)

May 19, 2015

Sent by UPS Overnight

Mr. Charles Adams  
Colorado Department of Public Health and Environment  
Hazardous Materials and Waste Management Division  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

**SUBJECT: CLASS I MODIFICATIONS  
DACWPF RECONSTRUCTED CELL FACILITY (DACWPF)  
EPA ID NO. COD000695007  
PERMIT NO. CO-09-30-09-01**

Dear Mr. Adams:

Waste Management of Colorado, Inc. (WMC) is implementing certain Class I modifications to the above-referenced permit pursuant to §100.63(a) of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3 (Regulations).

Modification 1

The first modification pertains to the emergency coordinator contacts on page 4 of 7 of Attachment 6 (Preparedness, Prevention, and Contingency Plan), consisting of a telephone number change for the Emergency Coordinator and a change in the Alternate Emergency Coordinator.

Page 4 of 7 has been accordingly updated and is enclosed for insertion into the permit. For your convenience, a version showing the edits is also enclosed.

Modification 2

The second modification pertains to placement of a soil stockpile on the DACWPF property outside of the fenced enclosure of the DACWPF Reconstructed Cell. The source of the soil would be excavation from new disposal cell construction at the adjacent Denver Arapahoe Disposal Site (DADS). As shown in the attached drawing the stockpile would be located east of the fenced enclosure of the Reconstructed Cell and south of Ditch A. Accordingly, the proposed location would be away from the Reconstructed Cell, facility groundwater monitoring wells and piezometers, primary/secondary leachate sump access points and permanent survey benchmarks.

The proposed stockpile may remain at this location for an extended period, and may be permanent. We propose a maximum slope of 3H to 1V and a minimum setback of 50 feet from the fenced enclosure of the facility. Silt fences and/or straw wattles as well as other erosion control measures would be employed as necessary until vegetation on the stockpile is established. Grading would be performed in a manner to prevent runoff from the stockpile from draining onto the fenced enclosure of the facility.

Mr. Charles Adams  
May 18, 2015  
Page 2

Following your concurrence with the modifications, they will be sent to all persons on the current facility mailing list pursuant to §100.63(a)(1)(ii) of the Regulations.

Please call me at 303-914-1445 if you have questions about these Class I modifications.

Sincerely,



Tom Schweitzer, P.E.  
Senior Engineer

Enclosures

cc: Warren Brown, Tri-County Health  
Terry Brown, USEPA  
Gene Riordan, Vranesh and Raisch  
Steve Richtel, Waste Management  
Christopher Gibbs, Waste Management  
Doc Nyiro, Waste Management

**DACWPF RECONSTRUCTED CELL FACILITY**

**CLASS I MODIFICATIONS**

**MAY 19, 2015**

**MODIFICATION 1**

The names, addresses, and telephone numbers of the EC and his/her alternates and agencies that might be notified are listed as follows:

Mr. Doc Nyiro: Emergency Coordinator  
Denver Arapahoe Disposal Site  
3500 S. Gun Club Road  
Aurora, Colorado 80018  
(720) 876-2621 (office)  
~~(800) 882-3149 (after hours)~~ (303) 944-7526 (cell)

Mr. ~~Jason Chan~~ Christopher Gibbs: Alternate Emergency Coordinator  
Denver Arapahoe Disposal Site  
3500 S. Gun Club Road  
Aurora, Colorado 80018  
~~(303) 468-6040~~ (720) 876-2633 (office)  
~~(303) 5498-1790~~ (303) 961-8084 (cell)  
~~(800) 882-3149 (after hours)~~

## 2.2 Incident Assessment

The EC, or his/her representative, will immediately identify to the extent possible the character, exact source, amount, and areal extent of any released materials by observation, records review, and, if necessary, chemical analysis. While characterizing the release, the EC will assess possible direct and indirect hazards to human health and the environment that may result from the release. Based on a visual inspection of the release and reference to data sources, the EC will assess the following:

- Could the event threaten human health or the environment? If so, the Contingency Plan will be implemented.
- Can personnel control the emergency? If not, the EC will immediately notify the appropriate federal, state, and local agencies to request assistance.

No scenarios that would require evacuation of the facility or the surrounding area are envisioned.

## 3.1 IMPLEMENTATION OF CONTINGENCY PLAN

When the decision has been made to implement the Contingency Plan, the EC (or his/her designee) will immediately notify the following:

- Facility personnel, if they have not already been notified;
- The National Response Center (NRC) at (800) 424-8802 and report the following information:

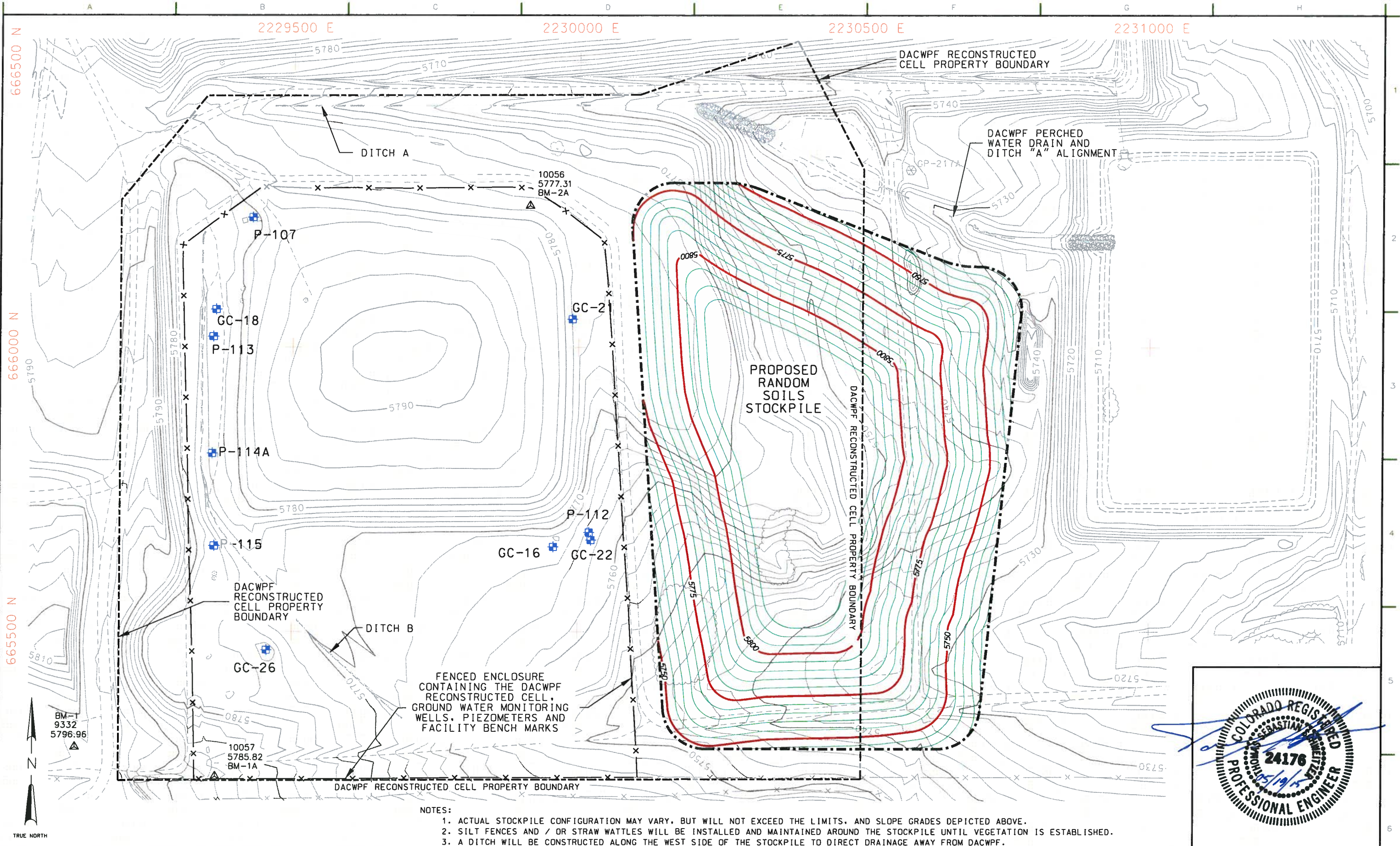
**DACWPF RECONSTRUCTED CELL FACILITY**

**CLASS I MODIFICATIONS**

**MAY 19, 2015**

**MODIFICATION 2**

DRAWING FILE: Proposed DACWPF Stockpile ver 1.dgn  
PLOT DATE: 5/19/2015 7:53:54 AM



75 0 75 150 225  
SCALE IN FEET



THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF WASTE MANAGEMENT ("WM"). THIS DOCUMENT IS, AND CONTAINS, CONFIDENTIAL AND TRADE SECRET INFORMATION OF WM. REPRODUCTION, DISCLOSURE OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACTOR OR AS EXPRESSLY AUTHORIZED IN WRITING BY WM. THIS DOCUMENT IS LOANED FOR LIMITED PURPOSES ONLY AND REMAINS THE PROPERTY OF WM. IT IS TO BE RETURNED UPON REQUEST AND IN ALL EVENTS UPON COMPLETION OF THE PURPOSE OF THE LOAN.

Revisions			
No.	Description	Date	By

Approved By: TSS  
Checked By: TSS  
Drawn By: DLH

Project Location:  
DENVER ARAPAHOE DISPOSAL SITE  
AURORA, COLORADO

PROPOSED DACWPF  
STOCKPILE

Drawing: Proposed DACWPF Stockpile v1.dgn  
Scale: As Shown  
Date: FEBRUARY 2015  
Sheet Number: 1

**Attachment A-3**

## 2016 Class 1 Permit Modification



## COLORADO

Department of Public  
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

May 13, 2016

Mr. Tom Schweitzer, P.E.  
Engineering Manager  
Waste Management of Colorado  
2400 W. Union Avenue  
Englewood, CO 80110

RE: 2015 Annual Groundwater Report - February 29, 2016  
DACWPF Reconstructed Cell Facility, Arapahoe County, CO  
State RCRA Permit #CO-09-30-09-01  
HMWMD File No: DAC PER 2.2

Dear Mr. Schweitzer,

The Hazardous Materials and Waste Management Division ("the Division") of the Colorado Department of Public Health and Environment has completed reviewing the 2015 annual Groundwater Monitoring Report for the DACWPF site. The report presents the results of both groundwater monitoring and leachate monitoring performed in 2015. As concluded in the report, the Division agrees that the elevated pH in monitoring well P-114a indicates that the physical integrity of the well may be compromised such that monitoring results from the well may be unrepresentative of groundwater conditions. According to Part 100 Appendix I of the Colorado Hazardous Waste Regulations, replacing an existing well without changing the location, design or depth is a Class 1 Modification. Thank you for notifying us prior to implementation. Please replace the well as you have proposed. If you have any questions regarding this letter, please contact me at 303-692-3368 or by email at [robert.beierle@state.co.us](mailto:robert.beierle@state.co.us).

Sincerely,

Robert Beierle  
Hazardous Waste Corrective Action Unit  
Hazardous Waste Program

cc: Tom Butts, Tri-County Health Department





26 West Dry Creek Circle, Suite 470 ♦ Littleton, CO 80120 ♦ 303-695-4660

October 18, 2016

S162063

Denver Arapahoe Chemical Waste Processing Facility (DACWPF)  
Waste Management of Colorado, Inc.  
2400 West Union Avenue  
Englewood, CO 80110

Attention: Tom Schweitzer  
Site Engineer

**RE: Installation of Replacement Well P-114A-R and Abandonment of Well P-114A  
DACWPF Reconstructed Cell Facility  
DADS Landfill, Aurora, Colorado**

Dear Mr. Schweitzer:

Swift River Environmental Services, Inc. (Swift River) is pleased to provide this summary report and work products for the installation and completion of new replacement well P-114A-R, and abandonment of former well P-114A at DACWPF. This work was performed between July 11 and 14, 2016, under the work plan approved by Colorado Department of Public Health and Environment (CDPHE), Corrective Action Unit, on June 23, 2016 and under our scope of work dated March 4, as authorized by Waste Management of Colorado, Inc. (WMC) on June 21, 2016.

#### Background for the Replacement Well Purpose, Location, and Installation

Field parameters measured at well P-114A during the second half 2015 well purging and sampling activities showed anomalously high pH levels. A downhole camera survey showed evidence of fluid movement and precipitate formation above groundwater level within the well casing and suspended material in groundwater. These conditions suggested that a well integrity issue might be the cause of the observed anomalies. Based on these observations, it was determined that well P-114A could not produce reliable groundwater samples and the well should be replaced. The well integrity concern was presented in the 2015 Annual Groundwater Report submitted to CDPHE on March 1, 2016. Along with that determination, the report recommended replacement of well P-114A in order that representative groundwater samples could be obtained as required by the Post-Closure Care Permit. In a letter dated May 13, 2016, CDPHE agreed that the physical integrity of the well might have been compromised and that the well should be replaced.

WMC obtained CDPHE approval of the replacement well work plan in a June 23 email, including approval of the replacement well location and construction details. The new well

was installed and ready for sampling on July 28. CDPHE agreed in a June 24 email that the July sampling field and laboratory analytical data could be considered as part of the first half 2016 sampling event.

Well P-114A-R was drilled, installed, and developed in general accordance with the approved work plan, as follows.

#### Preparation

- A qualified driller, Drilling Engineers, Inc. (DEI) of Fort Collins, Colorado, was retained to advance the soil boring, obtain soil samples for lithologic description, and install and develop well P-114A-R and abandon well P-114A.
- Notice of Intent (NOI) to Construct Monitoring Hole(s) (Form GWS-51, 3/2013) was filed with the Colorado Office of the State Engineer (OSE), and was approved by the OSE on June 17, 2016. A copy of this form is included in **Attachment 1**.
- A site-specific Health and Safety Plan (HASP) was prepared. Work was performed using Level D personal protective equipment (PPE), including hard hats, gloves, safety glasses, hearing protection, and steel-toed boots. Field personnel were required to have 40-hour OSHA HAZWOPER training and current 8-hour training update certificates.
- The UNCC “one-call” utility locating service was called on June 16. Responses from utilities were received between June 16 and 20, 2016.

#### Well Installation

- The well installation work was performed between July 11 and 14, 2016, in accordance with the following:
  - Waste Management “Typical Monitor Well/Piezometer Construction Standard,” January 2002, v. 6.2.
  - Waste Management “Groundwater Monitor Well Construction Standard (Submerged Screen)” (schematic).
  - Waste Management “Monitor Well/Piezometer Development Standard,” September 2000.
  - Waste Management “Well/Piezometer Decommissioning Standard.”
  - Colorado Office of the State Engineer, State Board of Examiners of Water Well Construction and Pump Installation Contractors, Water Well Construction Rules, 2 CCR 402-2, effective January 1, 2005, and revisions effective September 1, 2016.
- DEI, under the direct supervision of a Swift River hydrogeologist, drilled and installed well P-114A-R at a location that is northeast of former well P-114A and approximately 20 feet closer to the waste area/rock cover of the reconstructed cell.
- On July 11, the soil boring that was completed as well P-114A was drilled to a depth of 99.0 feet below ground surface (bgs) using the hollow-stem augering method by a

CME 75 truck-mounted rig. Continuous soil samples were collected from ground surface to total depth for lithologic description and to identify the top of the target water-bearing sand stratum (Lower Sandstone). Continuous samples were collected in four or five-foot long intervals from 0 to 39 feet below ground surface (bgs) in relatively soft subsurface material that was fine-grained sand, silt, and clay; in 2.5-foot intervals from 39 to 84 feet bgs in relatively harder material that was fine-grained sand, silty sand, silt, clay, and claystone; and in one foot, four-foot, and five-foot intervals from 84 to total depth in hard and moist material that was loose to dense, fine-grained sand with occasional one-foot thick intervals of indurated sandstone. The top of the Lower Sandstone was encountered at 85 feet bgs. With the exception of two inches of saturated silt observed at 50 feet bgs, the subsurface material in the continuous sample barrel was dry above 85 feet bgs.

- On July 12, the depth to water inside the augers was 10.2 feet bgs. After flushing the augers, groundwater entered at the bottom of the borehole at a rate of approximately 0.6 feet per minute. Based on this confirmation of adequate recharge from the Lower Sand, the well was completed with a slotted PVC well screen set between 98 to 88 feet bgs and blank PVC pipe from 88 feet bgs to 3.1 feet above ground surface (stickup). The PVC pipe was two-inch inner-diameter Schedule 40 with threaded joints and "O" ring seals. Sand was placed around the screen, using a tremie pipe, from total depth to 84 feet, which is four feet above the top of the screen. A bentonite chip seal was set from 84 to 80 feet bgs in the annulus between the PVC casing and the borehole wall and hydrated by groundwater present within the well.

Water pumped from the borehole, augers, and well during installation was containerized and handled in the same manner as DACWPF leachate. It was used for dust control at the DADS Subtitle D landfill and applied to areas with base liner at a rate to minimize ponding. The application area is located away from public travel and the active disposal areas.

- On July 13, the depth to water inside the well had stabilized to approximately 72.6 feet bgs. Grout was placed by side-discharging tremie pipe into the annulus between the PVC well and the outside of borehole to 4 feet bgs.
- On July 14, the surface protection for the well was constructed. The surface completion included a new, six-inch diameter, seven-foot long, unpainted, protective steel surface casing that extended from 3.5 feet bgs to 3.5 feet above ground. Concrete was poured from the top of grout at 4 feet bgs, both inside the steel casing and between the steel casing and the borehole wall, to form the upper annual seal and to form the concrete surface pad to stabilize the surface protective pipe. The four-inch thick well pad was constructed inside a four feet by four feet wood form. The annulus between the steel casing and PVC pipe was filled with bentonite chips to approximately six inches above ground surface. The remaining annular space was filled with sand to a height of approximately two inches below the top of PVC casing. A ¼-inch weep hole was drilled into the protective casing at approximately six inches above ground surface, at the bentonite/sand interface. Four bollards were installed at the corners of the concrete pad. The bollards were four-inch diameter steel pipes filled with concrete. The bollards were installed approximately 3 feet below ground

and extend approximately 4 feet above ground surface. The bollards had been painted bright yellow prior to being transported to the site for installation.

- Swift River completed a soil boring log for the new well. The boring log includes total depth, sample depth, geologic description and/or Unified Soil Classification System (USCS) description, and well completion details. Well location survey information provided by WMC, including top of PVC casing elevation, ground surface elevation, and northing/easting coordinates, are included on the boring log. The soil boring log is included as **Attachment 2**.
- Swift River filed the Well Construction and Test Report (Form GWS-31, 04/2012) and Monitoring/Observation Water Well Permit Application (Form GWS-46, 11/2012) with the OSE, in an email dated September 12, 2016. Copies of these forms are included as **Attachment 3**. OSE requires a new permit to be issued for well P-114A-R because the permit number associated with original well P-114 cannot be re-assigned.

#### Well Development

- Well P-114A-R was developed on July 14. A copy of the development form is included in **Attachment 4**. The depth to water in P-114A prior to well development was 75.95 feet below top of casing (TOC) and total well depth was measured at 101 feet below TOC. Ten wellbore volumes of water (approximately 43 gallons) were removed during development by surging and pumping. During well development, the groundwater level dropped by approximately 23.25 feet. Development continued until water-quality parameters (specific conductivity, temperature, and pH) stabilized within 10 percent over the two-hour interval of well development.

Development water was containerized and handled in the same manner as DACWPF leachate. It was used for dust control at the DADS Subtitle D landfill and applied to areas with base liner at a rate to minimize ponding. The application area is located away from public travel and the active disposal areas.

#### Pump Installation

- A new QED low-flow sampling pump and tubing (air displacement and water discharge) was installed prior to sampling. The pump is 3.5 feet long with a 395 milliliter bladder. The pump is suspended in the well with the pump inlet (sample collection point) at approximately 98 feet below TOC. This places the pump intake approximately two feet below mid-screen. The pump was installed on July 27, one day prior to purging and sampling on July 28.

#### Construction Water Sample Results

- WMC DADS Landfill provided the drilling contractor with water to clean tools and continuous sampler barrels between use downhole and to prepare grout and cement. This construction water was obtained from the DADS water supply ECCV, which is East Cherry Creek Valley Water & Sanitation District treated water supplied to DADS

and accessed by a hydrant located at the south end of the DADS office trailers. The water was collected in a previously cleaned water tank on the drill rig and also in a previously cleaned water tank on the supply trailer. The drilling contractor transported the water to DACWPF in the rig and supply trailer tanks. A sample of the construction water from the rig tank, designated "Rig Water," was obtained by Swift River on July 12, 2016 and submitted for laboratory analysis for volatile organic compounds (VOCs), per WM's "Typical Monitor Well/Piezometer Construction Standard." The following VOCs were detected between 6.4 and 11 micrograms per liter ( $\mu\text{g/L}$ ), and above Reporting Limits (RLs): bromodichloromethane, bromoform, and dibromochloromethane, which are trihalomethanes (THMs). THMs are disinfection by-products found in public water supplies and are not unexpected in the construction water sample. In drinking water, the total of all THMs combined cannot exceed the regulatory limit of 80  $\mu\text{g/L}$ .

Swift River recommends that the laboratory analytical results be retained in the DACWPF files should THMs be detected in future water analyses from well P-114A-R. A copy of the laboratory report of construction water is included in **Attachment 5**.

#### Abandonment of Well P-114A

- On July 14, former well P-114A was abandoned in accordance with Colorado Water Well Construction Rules. Prior to well abandonment, the water level was measured at a depth of 77.71 feet below TOC. Sand was placed inside the two-inch diameter PVC well across the screen from total well depth to 75 feet below TOC. Grout was placed in the well above the sand to a depth of one foot below TOC. The metal protective cover was pulled directly upward and out of the ground. The top 10-feet long section of PVC blank pipe snapped off at a joint and was removed from the ground. The upper four feet of open hole was filled with surface soil and manually compacted.
- As requested by Mr. Doug Stephenson, OSE Chief Well Inspector, Swift River completed but did not file a Well Abandonment Report (Form GWS-09, 4/2012) with the OSE. In a telephone and email exchange with the OSE, Mr. Stephenson directed Swift River to retain the Well Abandonment Report in "our" records, should future inquiries be made about well P-114A, but to not file a well abandonment report. The reasons for OSE's request include: OSE does not have a well abandonment record of the original well P-114; OSE does not have any records of well P-114A having been drilled; and well P-114A was drilled by "others" but abandoned by Swift River on WMC's behalf. A copy of the well P-114A abandonment report form for WMC's records is included as **Attachment 6**.

We appreciate WMC consideration of Swift River's services for DACWPF, specifically to assist with this well installation and abandonment task. If you have any questions, please contact us by telephone at (303) 695-4660 or by email to [Cathryn.Stewart@SwiftRiverES.com](mailto:Cathryn.Stewart@SwiftRiverES.com) or [Steve.Wampler@SwiftRiverES.com](mailto:Steve.Wampler@SwiftRiverES.com).

Sincerely,  
Swift River Environmental Services, LLC



Cathryn Stewart, P.G.  
Project Manager



Stephen Wampler, P.E.  
General Manager

Attachments

- Attachment 1 Copy of Notice of Intent to Construct (Form GWS-51, 3/2013)
- Attachment 2 Soil Boring Record and Well Completion Details
- Attachment 3 Copies of Well Construction and Test Report (Form GWS-31) with attached boring log, and Monitoring/Observation Water Well Permit Application Form (GWS-46)
- Attachment 4 Record of Well Development
- Attachment 5 Laboratory Analytical Results of Construction Water
- Attachment 6 Copy of Well Abandonment Report (Form GWS-09) (not submitted to OSE but to be retained in WMC files)

cc: Lou Bull, WM (e-copy)  
Doc Nyiro, WMC (e-copy)  
Steve Richtel, WMC (e-copy)

**ATTACHMENT 1**

**COPY OF NOTICE OF INTENT TO CONSTRUCT (FORM GWS-51, 3/2013)**

# NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

JUN 17 2016

Please type or print legibly in black or blue ink or file online @ [dwrpermitsonline@state.co.us](mailto:dwrpermitsonline@state.co.us)

COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80202

PHONE: 303-866-3581--FAX: 303-866-3589 WEB: [www.water.state.co.us](http://www.water.state.co.us)

WATER RESOURCES  
STATE ENGINEER COLO

Well Owner Name(s): Waste Management of Colorado, Inc.

Address : 2400 West Union Ave., Englewood, CO 80110

Phone (area code & no.): 303-914-1445

Landowner's Name: Waste Management of Colorado, Inc.

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado - Lic. No. \_\_\_\_\_

☐ Professional Engineer Registered in Colorado - Reg. No. \_\_\_\_\_

☒ Professional Geologist per CRS 34-1-201(3)

☐ Other - anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Cathryn Stewart/Swift River Environmental Sv

Address 26 West Dry Creek Circle, Ste. 470

City, State & Zip Littleton, CO 80120

Phone 303-895-4660 Fax 720-524-8577

Print Name: Cathryn Stewart

Sign or enter full name here: Cathryn Stewart

Location: NW  $\frac{1}{4}$  SE  $\frac{1}{4}$ , Section 32

Township 4  $\square$  N  $\square$  S, Range 65  $\square$  E  $\square$  W, 6th PM

County Arapahoe County

Subdivision: \_\_\_\_\_

Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Filing Unit: \_\_\_\_\_

Site/Property Address 3500 South Gun Club Road  
Aurora, CO 80018

GPS Location in UTM format (optional):

Set GPS unit to true north, datum NAD83, and use meters for the distance units, ☐ Zone 12 or ☐ Zone 13.

Easting \_\_\_\_\_ Northing \_\_\_\_\_

# of Monitoring Hole(s) to be constructed: 1

Estimated Depth 90 Ft., Aquifer Lower Sandstone

Purpose of Monitoring Hole(s) To monitor shallow groundwater. Replacement well for P-1141A. - P-114A

Anticipated Date of Construction (mm/dd/yyyy) CRS, 6/17/16 06/21/2016

Date Notice Submitted (mm/dd/yyyy): 06/16/2016  
(Must be at least 3 days prior to construction)

## ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE FOR OFFICE USE ONLY

055525

- MH

PROCESSED BY [Signature]

Div. 1 WD 2 BAS \_\_\_\_\_ MD \_\_\_\_\_

DATE ACKNOWLEDGED 6/17/16

### CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

- 1) Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).
- 2) Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer. Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing shall not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.
- 3) All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including online filing instructions, are found on the DWR website at <http://www.water.state.co.us>. Well Construction and Test Reports (GWS-31) must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion.
- 4) Unless a well permit is obtained, or variance approved, the hole(s) must be plugged and sealed within one (1) year after construction. An Abandonment Report (form GWS-9) must be submitted within 60 days of plugging & sealing. The above MH acknowledgement number, owner's structure name, and owner's name and address must be provided on all well permit application(s), well construction and abandonment reports.
- 5) The owner of the hole(s) shall maintain records of water quality testing and submit this data to the State Engineer upon request.
- 6) A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.
- 7) IF HOLES WILL NOT BE CONSTRUCTED UNDER THIS NOTICE WITHIN 90 DAYS, PLEASE WRITE, "NO HOLES CONSTRUCTED" ON A COPY OF THE ACKNOWLEDGED NOTICE WITH THE FILE NUMBER AND FAX THE COPY TO THE DIVISION OF WATER RESOURCES.

THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

**ATTACHMENT 2**

**SOIL BORING RECORD AND WELL COMPLETION DETAILS**

## SAMPLE INFORMATION

### SOIL SAMPLING



SPLIT-BARREL SAMPLE



THIN-WALL TUBE SAMPLE  
(PER ASTM D1587)



CONTINUOUS SAMPLE



DRILL WITHOUT SAMPLING

### SAMPLE ODORS, WHERE APPROPRIATE

NONE	NO ODOR	MO	MODERATE ODOR
WO	WEAK ODOR	SO	STRONG ODOR

### GRAPHIC LOG



FILL



GRAVEL



CLAY OR  
CLAYSTONE



CONCRETE



SILT OR  
SILTSTONE



ASPHALT

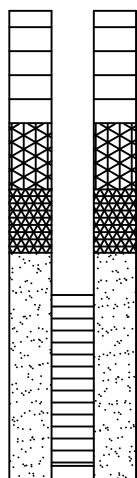


SAND OR  
SANDSTONE



COAL OR  
LIGNITIC  
MATERIAL

### WELL COMPLETION DETAIL



PORTLAND CEMENT/  
SODIUM BENTONITE  
GROUT

SODIUM BENTONITE  
CHIP

SODIUM BENTONITE PELLET  
SEAL

SAND OR GRAVEL  
BACKFILL

SCREENED INTERVAL

CAP

#### NOTE:

A BORING/WELL RECORD IS CONSIDERED REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE BORING/WELL LOCATION ON THE DATES SHOWN. IT IS NOT WARRANTED TO REPRESENT SUBSURFACE CONDITIONS AT OTHER LOCATIONS OR TIMES.

SUBSURFACE CONDITIONS SHOWN ON THESE RECORDS OR ON PROFILES DEVELOPED FROM THESE RECORDS ARE NOT WARRANTED, THEY ARE ESTIMATED BASED ON ACCEPTED ENGINEERING AND GEOLOGIC PRINCIPLES AND PRACTICES AND REASONABLE PROFESSIONAL JUDGEMENT.



LEGEND FOR  
MONITOR WELL AND  
SOIL BORING RECORDS

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
0	Ground Surface: 5778.0'							0
0	TOPSOIL: Firm, moderate yellowish-brown (10YR 5/4), silty CLAY, with calcite/gypsum throughout, dry	CL			42/ 48	NO		
2.0	Very stiff, pale brown (5YR 5/2) SILT, dry micaceous							
5	...laminated below 6.5' with light brown (5YR 5/6) staining, in layers 1" to 2" thick	ML			60/ 60	NO		
10	Firm, grayish brown (5YR 3/2), CLAY, dry	CL			60/ 60	NO		
11.0	Loose, moderate brown (5YR 4/4), medium to fine-grained SAND, dry							
11.5	Very dense, grayish brown (10YR 2/4), SAND, dry							
12.5	Medium dense, pale brown (5YR 5/2), very fine-grained SAND, dry with limonite staining	SM			60/ 60	NO		
15	Stiff, pale brown (5YR 5/2) silty CLAY, dry							
16.5	...limonite staining from 15.5' to 16.5' and 19.0' to 20.0'							
20	...increase in very fine-grained sand below 22.0'	CL			60/ 60	NO		
25								
27.0	Hard, grayish brown (5YR 3/2), CLAY, dry ...two high angle limonite-lined fractures @ 27.5' and 28.5'							
28.5	Hard, pale brown (5YR 5/2), slightly silty CLAY, dry							
30	Stiff, pale brown, clayey SILT, dry	ML			60/ 60	NO		
31.5	Stiff, gray and brown, CLAY, dry	CL						
32.5	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry							
35	...increasing very fine-grained sand percentage below 38.0'	ML			60/ 60	NO		
40					30/ 30	NO		



### Soil Boring Record

Location P-114A-R

Coordinates: N 665826, E 2229380

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS

Checked By SLW

Installation Date July 11 & 12, 2016

Page 1 of 3

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
40	See 32.5' to 42.5'							40
42.5	Stiff, grayish brown (5YR 3/2), slightly silty CLAY, dry	CL			30/ 30	NO		
44.0	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry	ML						
45	Stiff, gray, light brown, slightly silty CLAY, dry	CL			30/ 30	NO		45
46.0	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry with limonitic staining, slightly fossiliferous (dark brown plant impressions on horizontal surfaces)				30/ 30	NO		
50	2" wet @ 50.0'	ML			30/ 30	NO		50
					30/ 30	NO		
	...brown (5YR 4/1), gray, silty CLAY with navy blue blebs @ 44.5' to 55.0'				30/ 30	NO		
55	Firm, moderate brown (5YR 4/4), silty, very fine-grained SAND, very micaceous, dry	SM			30/ 30	NO		55
58.0	Loose, greenish black (5YR 2/1), very fine-grained SAND, slightly silty, dry, crumbly				30/ 30	NO		
60		SP			30/ 30	NO		60
					30/ 30	NO		
65	Stiff, greenish black (5YR 2/1), micaceous CLAYSTONE, dry				30/ 30	NO		65
	...occasional slickensides between 66.5' and 69.0'				30/ 30	NO		
		CL					2" i.d. SCH 40 PVC	
70	...abundant slickensides between 69.0' and 71.5'				30/ 30	NO		70
73.0	Medium dense, black, very fine-grained SAND with shale blebs/intracasts, dry	SP			30/ 30	NO		
75	Stiff, greenish black (5YR 2/1), micaceous CLAYSTONE, dry				30/ 30	NO		75
		CL			30/ 30	NO		
80					30/ 30	NO		80



### Soil Boring Record

Location P-114A-R


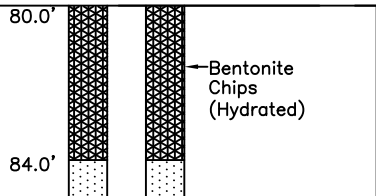

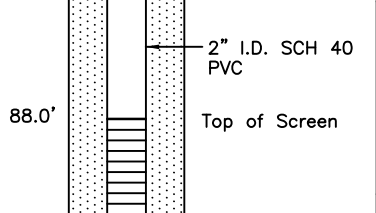
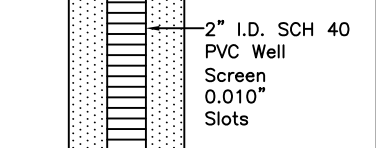
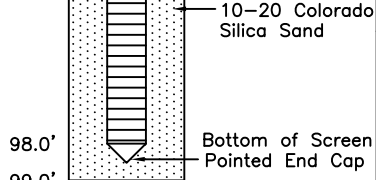

Coordinates: N 665826, E 2229380

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS

Checked By SLW

Installation Date July 11 & 12, 2016 Page 2 of 3

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
80	See 75.0' to 80.0'							80
85	Loose to dense, fine-grained SAND, (variegated white, cream and black grains), moist	CL			30/ 30	NO	80.0' 	85
90	...indurated sandstone, platy, friable from 90.5' to 91.5'	SP			60/ 60	NO	84.0' 	90
95	...indurated sandstone from 97.0' to 98.0'				50/ 60	NO	88.0' 	95
99.0	B.T. @ 99.0'				48/ 48	NO	98.0' 	99.0
100					12/ 12	NO	99.0' 	100
105								105
110								110
115								115
120								120



### Soil Boring Record

Location P-114A-R

Coordinates: N 665826, E 2229380

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS

Checked By SLW

Installation Date July 11 & 12, 2016

Page 3 of 3

**ATTACHMENT 3**

**COPIES OF WELL CONSTRUCTION AND TEST REPORT (FORM GWS-31) WITH  
ATTACHED BORING LOG, AND MONITORING/OBSERVATION WATER WELL PERMIT  
APPLICATION FORM (GWS-46)**



26 West Dry Creek Circle, Suite 470 ♦ Littleton, CO 80120 ♦ 303-695-4660

September 12, 2016

S162063.01

Office of the State Engineer  
Colorado Division of Water Resources  
Department of Natural Resources  
1313 Sherman Street, Room 818  
Denver, Colorado 80203

**RE: Transmittal of Water Well Construction and Test Report and Water Well Permit Application  
Waste Management of Colorado, Inc.  
DACWPF, Aurora, Colorado**

Swift River Environmental Services, Inc. (Swift River), on behalf of Waste Management of Colorado, Inc. (WMC), provides the following items:

- Well Construction and Test Report for one well completed between July 11 and July 12, 2016 and drilled under the Notice of Intent to Construct Monitoring Hole(s) MH-055525).
- The Water Well Permit Application for new well P-114A-R constructed under MH-055525.

Please contact us if you have questions or need additional information at (303) 695-4660 or by Facsimile at (720) 524-8577.

Sincerely,  
Swift River Environmental Services, LLC

Cathryn Stewart, C.P.G.  
Project Manager

Stephen Wampler, P.E.  
General Manager

Attachments

Well Construction and Test Report Form (GWS-31)  
Water Well Permit Application Form (GWS-46)

Electronic copies to  
Lou Bull, WMC  
Tom Schweitzer, WMC

[illegible]

## INSTRUCTIONS FOR WELL CONSTRUCTION AND TEST REPORT

This report must be computer generated online, typed or printed in **BLACK OR BLUE INK** and may be reproduced by photocopy or computer generation. Photocopy reproductions must retain margins and print quality. Attach additional sheets if more space is required. Each additional sheet must be identified at the top by the well owner's name, the permit number, form name/number and a sequential page number. Report depths in feet below ground surface. **If filing online please see online filing instructions at [www.water.state.co.us](http://www.water.state.co.us)**

**The form must be submitted to the State Engineer's Office within 60 days after completing the well or 7 days after the permit expiration date, whichever is earlier.**

**A copy of the form must be provided to the well owner.**

### **ITEM INSTRUCTIONS: (numbers correspond with those on the front of this form)**

1. Complete the **Well Permit Number** in full.
2. Fill in **Name and Mailing Address of Well Owner** where correspondence should be sent.
3. Complete the blocks for the **actual** location of where the well was drilled. If the owner has more than one well serving this property, provide the identification (**Owner's Designation**) for this well. For wells located in subdivisions, the name, lot, block, filing, and street address must also be provided. An option to providing distances from section lines is to provide an accurate GPS location in GPS format. The required GPS unit settings must be as indicated on this form.  
  
Colorado contains two (2) UTM zones. Zone 13 covers most of Colorado. The boundary between Zone 12 and Zone 13 is the 108<sup>th</sup> Meridian (longitude). West of the 108<sup>th</sup> Meridian is UTM Zone 12 and east of the 108<sup>th</sup> Meridian is UTM Zone 13. The 108<sup>th</sup> Meridian is approximately 57 miles east of the Colorado-Utah state line. On most GPS units, the UTM zone is given as part of the Easting measurement, e.g. 12T0123456. Check the appropriate box for the zone.
4. Report the ground surface elevation in feet above sea level if available. This value may be obtained from a topographic map. Describe the drilling method used to construct the well and the date completed. Indicate the total depth and the actual completed depth of the well.
5. Fully describe the materials encountered in drilling. Do not use formation names unless they are in conjunction with a description of materials.  
Examples of descriptive terms include:  
**Type** – sandstone, sand, etc.  
**Grain size** – Boulders, gravel, sand, silt, clay, etc.  
**Color** – All materials, most critical in sedimentary rock  
**Water Location** – Depth when water is encountered (if it can be determined)
6. Provide the diameters of the drilled borehole.
7. The outside diameter, kind, wall thickness, and interval of plain and perforated casing lengths must be indicated. For perforated casing, the screen size must be indicated.
8. Indicate the material and size of filter pack (e.g. sand, gravel, etc.) and the interval where placed.
9. Indicate the type and setting depth for any packers installed.
10. The material, amount, and interval of the grout slurry must be reported. Density may be indicated as pounds per gallon, gallons of water per sack, total gallons of water used, or number of sacks used, etc. Specify the grout placement method, i.e. tremie pipe or positive placement. The percentage of additives mixed with the grout should be reported under remarks in item 5.
11. Record the type and the amount of disinfection used, how placed, and the length of time left in the hole.
12. Report well test data as required by Rule 10.7. Spaces are provided to report all measurements made during the test. The report should show that the test complied with the provisions of the rules. If a test was not performed explain when it will be done. If available, report clock time when measurements were taken.
13. Fill in **Company Name and Address of Contractor** who constructed the well. The licensed contractor responsible for the construction of the well must sign or if filing online, enter his/her name on the report. If filing online the State Engineer considers the entering of the licensed contractors name on the form to be a certification of accuracy and truthfulness in compliance with Rule 17.4 of the Water Well Construction Rules and Regulations, 2 CCR 402-2.

Submit completed report to: State of Colorado, Office of the State Engineer, 818 Centennial Bldg., 1313 Sherman St, Ste 821, Denver, CO 80203. You may also save, print, scan and email the completed form to [dwpermitsonline@state.co.us](mailto:dwpermitsonline@state.co.us)

**IF YOU HAVE ANY QUESTIONS** regarding any item on this form, please call the Division of Water Resources Ground Water Information Desk (303-866-3587), or the nearest Division of Water Resources Field Office located in Greeley (970-352-8712), Pueblo (719-542-3368), Alamosa (719-589-6683), Montrose (970-249-6622), Glenwood Springs (970-945-5665), Steamboat Springs (970-879-0272), or Durango (970-247-1845), or refer to our web site at [www.water.state.co.us](http://www.water.state.co.us) for general information, forms, online filing instructions and access to state rules and statutes.

## SAMPLE INFORMATION

### SOIL SAMPLING



SPLIT-BARREL SAMPLE



CONTINUOUS SAMPLE



THIN-WALL TUBE SAMPLE  
(PER ASTM D1587)



DRILL WITHOUT SAMPLING

SAMPLE ODORS, WHERE APPROPRIATE  
 NONE NO ODOR      MO MODERATE ODOR  
 WO WEAK ODOR      SO STRONG ODOR

### GRAPHIC LOG



FILL



GRAVEL



CLAY OR  
CLAYSTONE



CONCRETE



SILT OR  
SILTSTONE



ASPHALT

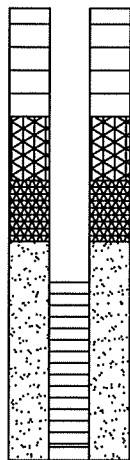


SAND OR  
SANDSTONE



COAL OR  
LIGNITIC  
MATERIAL

### WELL COMPLETION DETAIL



PORTLAND CEMENT/  
SODIUM BENTONITE  
GROUT

SODIUM BENTONITE  
CHIP

SODIUM BENTONITE PELLET  
SEAL

SAND OR GRAVEL  
BACKFILL

SCREENED INTERVAL

CAP

#### NOTE:

A BORING/WELL RECORD IS CONSIDERED REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE BORING/WELL LOCATION ON THE DATES SHOWN. IT IS NOT WARRANTED TO REPRESENT SUBSURFACE CONDITIONS AT OTHER LOCATIONS OR TIMES.

SUBSURFACE CONDITIONS SHOWN ON THESE RECORDS OR ON PROFILES DEVELOPED FROM THESE RECORDS ARE NOT WARRANTED, THEY ARE ESTIMATED BASED ON ACCEPTED ENGINEERING AND GEOLOGIC PRINCIPLES AND PRACTICES AND REASONABLE PROFESSIONAL JUDGEMENT.



LEGEND FOR  
MONITOR WELL AND  
SOIL BORING RECORDS

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
0	Ground Surface: 5778.0'						Locking Cover Top of PVC 5780.63' 6" Steel Protective Outer Casing Coarse Sand 1/4" Weephole Bentonite Chips Concrete Pad Stickup 3.1'	0
2.0	TOPSOIL: Firm, moderate yellowish-brown (10YR 5/4), silty CLAY, with calcite/gypsum throughout, dry	CL			42/48	NO		
5	Very stiff, pale brown (5YR 5/2) SILT, dry micaceous						Concrete	
	...laminated below 6.5' with light brown (5YR 5/6) staining, in layers 1" to 2" thick	ML			60/60	NO	4.0'	
10	Firm, grayish brown (5YR 3/2), CLAY, dry	CL			60/60	NO		
11.0	Loose, moderate brown (5YR 4/4), medium to fine-grained SAND, dry						8.25" Borehole	
11.5	Very dense, grayish brown (10YR 2/4), SAND, dry							
12.5	Medium dense, pale brown (5YR 5/2), very fine-grained SAND, dry with limonite staining	SM			60/60	NO	Bentonite Grout	
15	Stiff, pale brown (5YR 5/2) silty CLAY, dry							
16.5	...limonite staining from 15.5' to 16.5' and 19.0' to 20.0'				60/60	NO		
20	...increase in very fine-grained sand below 22.0'	CL			60/60	NO		
25					60/60	NO		
27.0	Hard, grayish brown (5YR 3/2), CLAY, dry						2" i.d. SCH 40 PVC	
28.5	...two high angle limonite-lined fractures @ 27.5' and 28.5'							
30	Hard, pale brown (5YR 5/2), slightly silty CLAY, dry							
31.5	Stiff, pale brown, clayey SILT, dry	ML			60/60	NO		
32.5	Stiff, gray and brown, CLAY, dry	CL						
35	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry							
40	...Increasing very fine-grained sand percentage below 38.0'	ML			60/60	NO		
					30/30	NO		



### Soil Boring Record

Location P-114A-R

Coordinates: N 665826, E 2229380

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS Checked By SLW

Installation Date July 11 & 12, 2016 Page 1 of 3

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
40	See 32.5' to 42.5'							40
42.5	Stiff, grayish brown (5YR 3/2), slightly silty CLAY, dry	CL			30/ 30	NO	<div>8.25" Borehole</div> <div>Bentonite Grout</div> <div>2" i.d. SCH 40 PVC</div>	
44.0	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry	ML			30/ 30	NO		
45	Stiff, gray, light brown, slightly silty CLAY, dry	CL			30/ 30	NO		45
46.0	Stiff, light brown and moderate brown (5YR 5/2 & 5YR 2/2), clayey SILT, dry with limonitic staining, slightly fossiliferous (dark brown plant impressions on horizontal surfaces)				30/ 30	NO		
50	2" wet @ 50.0'	ML			30/ 30	NO		50
					30/ 30	NO		
	...brown (5YR 4/1), gray, silty CLAY with navy blue blebs @ 44.5' to 55.0'				30/ 30	NO		
55	Firm, moderate brown (5YR 4/4), silty, very fine-grained SAND, very micaceous, dry	SM			30/ 30	NO		55
58.0	Loose, greenish black (5YR 2/1), very fine-grained SAND, slightly silty, dry, crumbly				30/ 30	NO		
60		SP			30/ 30	NO		60
					30/ 30	NO		
65	Stiff, greenish black (5YR 2/1), micaceous CLAYSTONE, dry				30/ 30	NO		65
	...occasional slickensides between 66.5' and 69.0'				30/ 30	NO		
70	...abundant slickensides between 69.0' and 71.5'	CL			30/ 30	NO		70
73.0	Medium dense, black, very fine-grained SAND with shale blebs/intraclasts, dry	SP			30/ 30	NO		
75	Stiff, greenish black (5YR 2/1), micaceous CLAYSTONE, dry	CL			30/ 30	NO		75
					30/ 30	NO		
80					30/ 30	NO		80



### Soil Boring Record

Location P-114A-R

Coordinates: N 665826, E 2229380

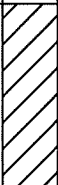
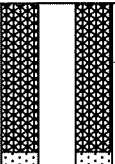
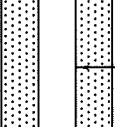

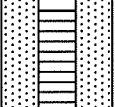
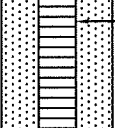
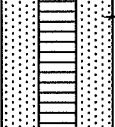

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS

Checked By SLW

Installation Date July 11 & 12, 2016

Page 2 of 3

DEPTH (Feet)	Description	USC	Graphic Log	Sample Interval	Recovery (Inches)	Odor	Well Detail	DEPTH (Feet)
80	See 75.0' to 80.0'							80
85	Loose to dense, fine-grained SAND, (variegated white, cream and black grains), moist	CL			30/ 30	NO	80.0'  Bentonite Chips (Hydrated)	80
90	...indurated sandstone, platy, friable from 90.5' to 91.5'				60/ 60	NO	84.0'  2" I.D. SCH 40 PVC	85
95	...indurated sandstone from 97.0' to 98.0'	SP			50/ 60	NO	88.0'  Top of Screen	90
99.0					48/ 48	NO	 2" I.D. SCH 40 PVC Well Screen 0.010" Slots	95
100	B.T. @ 99.0'				12/ 12	NO	 10-20 Colorado Silica Sand	99.0
105							 Bottom of Screen Pointed End Cap	100
110								105
115								110
120								115
								120



### Soil Boring Record

Location P-114A-R

Coordinates: N 665826, E 2229380

Drilled By Drilling Engineers Drilling Method HSA

Logged By CRS

Checked By SLW

Installation Date July 11 & 12, 2016 Page 3 of 3

COLORADO DIVISION OF WATER RESOURCES  
DEPARTMENT OF NATURAL RESOURCES  
1313 SHERMAN ST., Ste 821, DENVER CO 80203  
Phone: (303) 866-3581 Fax: (303) 866-2223 [dwrpermitsonline@state.co.us](mailto:dwrpermitsonline@state.co.us)

## MONITORING/OBSERVATION

### Water Well Permit Application

Review instructions on reverse side prior to completing form.  
The form must be typed, completed online or in black or blue ink.

#### 1. Well Owner Information

Name of well owner

Waste Management of Colorado, Inc.

Mailing address

2400 West Union Ave.

City

Englewood

State

CO

Zip code

80110

Telephone #

303-914-1445

E-Mail (If filing online it is required)

--

#### 2. Type Of Application (check applicable boxes)

- ☐ Use existing well ☐ Replacement for existing monitoring well:  
☒ Construct new well Permit no.:  
☐ Other:

#### 3. Refer To (if applicable)

Monitoring hole acknowledgment

MH- 055525

Well name or #

P-114A-R

#### 4. Location Of Proposed Well (Important! See Instructions)

County

Denver

NW 1/4 of the SE 1/4

Section

32

Township

4

N or S

1/4

Range

65

E or W

1/4

Principal Meridian

6th

Distance of well from section lines (section lines are typically not property lines)

1912.5 Ft from N 1/4 S 2060.6 Ft from E 1/4 W

For replacement wells only - distance and direction from old well to new well

NA feet NA direction

Well location address (Include City, State, Zip) ☐ Check if well address is same as Item 1

3500 South Gun Club Road Aurora, CO 80018

Optional: GPS well location information in UTM format  
You must check GPS unit for required settings as follows:

Format must be UTM

☐ Zone 12 or ☐ Zone 13

Units must be Meters

Datum must be NAD83

Unit must be set to true north

Was GPS unit checked for above? ☐ YES

Easting

Northing

Remember to set Datum to NAD83

#### 5. Property Owner Information

Name of property owner

Waste Management of Colorado, Inc.

Mailing address

2400 West Union Ave.

City

Englewood

State

CO

Zip Code

80110

Telephone #

303-914-1445

Office Use Only

Form GWS-46 (11/2011)

#### 6. Use Of Well

Use of this well is limited to monitoring water levels and/or water quality sampling

#### 7. Well Data (proposed)

Total depth

99.0

feet

Aquifer

Lower Sandstone

#### 8. Consultant Information (if applicable)

Name of contact person

Cathryn Stewart

Company name

Swift River Environmental Services

Mailing address

26 West Dry Creek Circle

City

Littleton

State

CO

Zip Code

80120

Telephone #

303-695-4660

#### 9. Proposed Well Driller License #(optional):

#### 10. Name of Well Owner or Authorized Agent

The making of false statements herein constitutes perjury in the second degree, which is punishable as a class 1 misdemeanor pursuant to C.R.S. 24-4-104 (13)(a). I have read the statements herein, know the contents thereof and state that they are true to my knowledge.

Sign or enter full name here

Cathryn Stewart

Date (mm/dd/yyyy)

8/15/16

If signing print name: Print title if other than land owner.

for WMC  
Cathryn Stewart

#### Office Use Only

USGS map name

DWR map no

Surface elev

Receipt area only

DIV \_\_\_\_ WD \_\_\_\_ BA \_\_\_\_ MD \_\_\_\_

## MONITORING/OBSERVATION WELL PERMIT APPLICATION INSTRUCTIONS

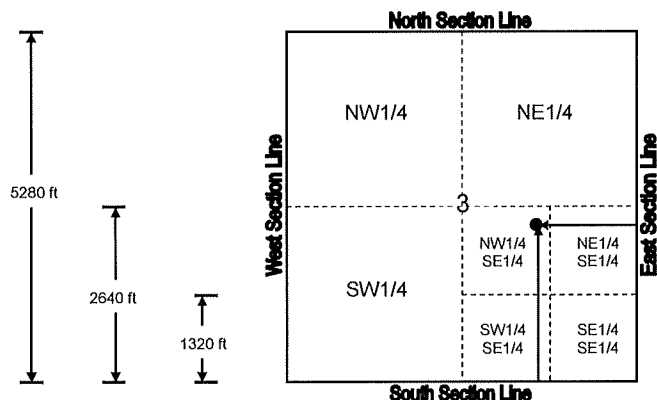
Applications must be computer generated on-line, typewritten or printed in BLACK or BLUE INK. ALL ITEMS in the application must be completed. Incomplete applications may be returned for more information. Applications are evaluated in chronological order. Please allow approximately six weeks for processing. This form may be reproduced by photocopying or computer generation. Reproductions must retain margins and print quality of the original form. If filing online, see online filing instructions for further information. You may also save, print, scan and email the completed form to: [dwrpermitsonline@state.co.us](mailto:dwrpermitsonline@state.co.us)

**FEES:** This application must be submitted with a \$100 filing fee. (The fee for an application to replace or deepen an existing permitted monitoring/observation well is \$100 for locations outside Designated Ground Water Basins, and \$60 inside Designated Ground Water Basins.) Acceptable forms of payment are check or money order, payable to the "Colorado Division of Water Resources." Payments made by Visa, MasterCard or Discover card can be accepted by phone through the Records Section at 303.866.3581. **Fees are nonrefundable.**

**USES:** This form (GWS-46) is to be used when applying for a permit where the only uses are monitoring of water levels and/or water quality sampling. For well construction criteria refer to the Colorado Water Well Construction Rules, 2CCR 402-2. A copy of the Rules may be obtained from any Division of Water Resources Office for a fee of \$5, or you may access them online from the State Board of Examiners' (BOE) website at <http://water.state.co.us/dwripub/documents/constructionrules05.pdf>

### ITEM INSTRUCTIONS: (numbers correspond with those on the front of this form)

1. Provide the name of the well owner and the mailing address where all correspondence will be sent.
2. Check and complete all boxes that apply.
3. Provide the MH number assigned by the Division of Water Resources in response to the notice of intent to construct a monitoring/observation well. Complete the well name if the structure has a name or identifying number.
4. If applying for a permit to **construct a new well**, you **must** provide the county, section #, township, range and principal meridian. You **do not** need to provide the ¼ of the ¼ section designation, distances from section lines or an optional GPS location (UTM coordinates). If a permit is issued and a well constructed, the authorized individual will be required to provide an accurate GPS location (UTM coordinates) of the "as-built" well location. If applying for a permit to **use an existing well** you **must** provide the well location information stated above, as well as either a GPS location (UTM coordinates) of the existing well site, or distances from section lines (**including the ¼ of the ¼ section designation**) as follows: In a typical case, a township is comprised of 36 sections, with each section ideally one mile square, or 5,280 feet on each side. Sections are further divided into quarter sections. Each ¼ Section is 2,640 feet by 2,640 feet and comprises 160 acres. Each ¼ section can be further divided into additional quarters. Each 1/16 of the ¼ Section is 1,320 feet by 1,320 feet and comprises 40 acres. The distances are measured from the section lines. In the following example, the well is located 2,500 feet from the South Section line and 1,400 feet from the East Section line:



Well Location Example:  
NW1/4 of the SE1/4 of  
Section 3, being 2500 feet  
from the South Section Line  
and 1400 feet from the East  
Section Line.

If providing a GPS location (UTM coordinates), the required GPS unit settings must be as indicated on this form. Colorado contains two UTM zones (12 & 13). Zone 13 covers most of Colorado. The boundary between Zone 12 and Zone 13 is the 108<sup>th</sup> Meridian (longitude). West of the 108<sup>th</sup> Meridian is UTM Zone 12 and east of the 108<sup>th</sup> Meridian is UTM Zone 13. The 108<sup>th</sup> Meridian is approximately 57 miles east of the Colorado-Utah state line. On most GPS units, the UTM zone is given as part of the Easting measurement, e.g. 12T0123456. Check the appropriate box for the zone. Provide the property address of the well location if one exists. If it is the same as the mailing address, check the box next to the well location address.

5. Provide property owner information.
6. Use of this well is limited to monitoring water levels and/or water quality sampling only.
7. The actual or anticipated total depth must be provided. Provide the name of the aquifer in which the well will be completed.
8. Provide consultant information (if applicable). Note: A consultant may sign this application on behalf of their client.
9. Monitoring/observation wells must be constructed by a Colorado licensed well construction contractor or authorized individual, as defined in the Well Construction Rules, 2CCR 402-2. Only a licensed contractor may construct any monitoring/observation well that penetrates a confining layer, or, is to be converted into a future production well. The well must be constructed in compliance with the Well Construction Rules, unless a variance has been approved allowing an alternative construction design.
10. The individual signing the application or entering their name (and title if applicable) must be the applicant or an officer of the corporation/company/agency identified as the applicant, their attorney or consultant. An authorized agent may also sign the application, if a letter signed by the applicant or their attorney is submitted with the application authorizing that agent to sign or enter their name on the applicant's behalf. Payment must be received via phone, fax or mail prior to processing the application. If filing online please call the Records Section at 303.866.3581 to pay via credit card.

**IF YOU HAVE ANY QUESTIONS** regarding any item on the application form, please call the Division of Water Resources Ground Water Information Desk (303-866-3587), or the nearest Division of Water Resources Field Office located in Greeley (970-352-8712), Pueblo (719-542-3368), Alamosa (719-589-6683), Montrose (970-249-6622), Glenwood Springs (970-945-5665), Steamboat Springs (970-879-0272), or Durango (970-247-1845), or refer to CDWR web site at <http://www.water.state.co.us> for general information.

**ATTACHMENT 4**  
**RECORD OF WELL DEVELOPMENT**

JOB NO. SLV 2003PAGE 1 OF 2JOB NAME DARVEE Well ReclamationLOCATION ~20' NE of P-114ABY URSDATE 7/14/16

## WELL DEVELOPMENT

WELL NO. P-114A-RDATE: 7/14/16WATER LEVEL (START): 75.95' Below TOCMEASURED TOTAL DEPTH OF WELL (START): 102.6' Below TOC (URS -TIME (START): 0745too far down in pointed cap, did not use.

## WATER DESCRIPTION (START)

Color: Moderately brown ClearCloudyOdor: None Weak Moderate StrongANY FILMS OR FLOATING MATERIAL: None

## WATER DESCRIPTION (FINISH)

Color: Light brown CLEARSlightly CLOUDYOdor: None Weak Moderate StrongANY FILMS OR FLOATING MATERIAL: None

102.6  
- 75.95  
= ~26.7 ft  
x 0.16 gpf  
= 4.3 gal

TIME (FINISH): 0940WATER LEVEL (FINISH): 99.20APPROX. VOLUME WATER REMOVED: 43 gallons

MEASURED TOTAL DEPTH OF WELL (FINISH):

101.0 (Driller)  
Below TOC, clear

## COMMENTS:

	Time	Volume	pH	Temp	SC	Description
Bail	0745	0	7.02	14.8	3.495	mod. brown, v. turbid
	0751	1.8 gal	7.51	14.4	3.605	" "
	0757	2.5 gal	7.45	15.0	3.543	" "
Pump	0818	5.8 gal	7.37	16.2	3.565	" Settles to about 1" clear
(Mega Monsoon @ 2 gpm)	0830	8.6 gal	7.35	16.5	3.510	Light gray, mod. turbidity
	0838	12.9 gal	87.5 7.37	16.5	3.400	
	0845	17.2 gal	88.0 7.37	16.0	3.123	Light brown, mod. turbidity
1.24 min / 1 gallon			91.0 7.38	91.0 @ 0843		

0850 Surge when the ~ 8' wtr column from ~ 3" off bottom

	WBV	Od	∇ pH	Temp	SC	Description	
0852	⑤	24.5	92.92	15.7	3.000	Light brown, settling more quickly	
0855	Surge again.					" " " "	
0900	⑥	25.8	94.00	7.38	15.9	2.885	" " " "
0908	⑦	20.1	95.30	7.40	16.0	2.791	Light brown, mol-turbid
	Surge again						" " " "
0917	⑧	34.4	96.95	7.43	16.0	2.871	" " " "
	Surge again						" " " "
0928	⑨	38.7	99.60	7.46	15.9	2.679	" "
0940	⑩	43.0	99.20	7.52	15.8	2.031	Light brown, low turbidity

Recovery Test

	99.01	0 sec
	97.89	10
1.6'	97.00	20
	96.85	30
	96.68	40
	96.53	50
	96.43	60
1.01	96.05	1+20
	95.80	1+60
0.92	95.24	2+30
	94.71	2+60
	94.32	3+30
	93.91	3+60

Shut off pump at 0940.

P 2002

**ATTACHMENT 5**

**LABORATORY ANALYTICAL RESULTS OF CONSTRUCTION WATER**

## ANALYTICAL REPORT

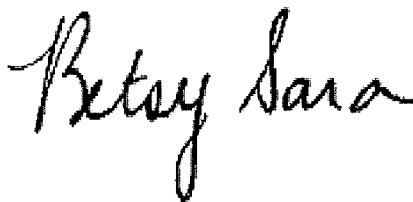
Job Number: 280-85464-1

Job Description: 555|Denver/Arapahoe Chem.

For:

Waste Management  
2400 West Union Avenue  
Englewood, CO 80110

Attention: Mr. Tom Schweitzer



Approved for release.  
Betsy A Sara  
Project Manager II  
7/29/2016 12:23 PM

---

Betsy A Sara, Project Manager II  
4955 Yarrow Street, Arvada, CO, 80002  
(303)736-0189  
betsy.sara@testamericainc.com  
07/29/2016

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

**TestAmerica Laboratories, Inc.**

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002  
Tel (303) 736-0100 Fax (303) 431-7171 [www.testamericainc.com](http://www.testamericainc.com)

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## **CASE NARRATIVE**

**Client: Waste Management**

**Project: 555|Denver/Arapahoe Chem.**

**Report Number: 280-85464-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

### **Sample Receiving**

The samples were received on 07/12/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 16.4 C. The cooler temperature was above the recommended temperature of 6.0C, however the cooler containing ice was received the same day as sampling and the chilling process had begun.

### **Holding Times**

All holding times were within established control limits.

### **Method Blanks**

All Method Blanks were within established control limits.

### **Laboratory Control Samples (LCS)**

All Laboratory Control Samples were within established control limits.

### **Matrix Spike and Matrix Spike Duplicate (MS/MSD)**

All MS/MSD recoveries were within established control limits.

### **Organics**

The Method 8260B surrogate recoveries of 1,2-Dichloroethane-d4 and Dibromofluoromethane were above the upper control limits for sample TRIP BLANK. Because the data are considered to be biased high and all target analytes in the sample were non-detect above the reporting limits, corrective action was deemed unnecessary.

## EXECUTIVE SUMMARY - Detections

Client: Waste Management

Job Number: 280-85464-1

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
<b>280-85464-1</b>	<b>RIG WATER</b>					
Bromodichloromethane		6.6		1.0	ug/L	8260B
Bromoform		6.4		4.0	ug/L	8260B
Dibromochloromethane		11		5.0	ug/L	8260B

## METHOD SUMMARY

Client: Waste Management

Job Number: 280-85464-1

Description	Lab Location	Method	Preparation Method
<b>Matrix: Water</b>			
Volatile Organic Compounds (GC/MS)	TAL DEN	SW846 8260B	
Purge and Trap	TAL DEN		SW846 5030B

### Lab References:

TAL DEN = TestAmerica Denver

### Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Waste Management

Job Number: 280-85464-1

Method	Analyst	Analyst ID
SW846 8260B	Ilczyszyn, Dennis P	DPI

## SAMPLE SUMMARY

Client: Waste Management

Job Number: 280-85464-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-85464-1	RIG WATER	Water	07/12/2016 1100	07/12/2016 1555
280-85464-2TB	TRIP BLANK	Water	07/12/2016 0000	07/12/2016 1555

# **SAMPLE RESULTS**

## Analytical Data

Client: Waste Management

Job Number: 280-85464-1

Client Sample ID: RIG WATER

Lab Sample ID: 280-85464-1

Date Sampled: 07/12/2016 1100

Client Matrix: Water

Date Received: 07/12/2016 1555

### 8260B Volatile Organic Compounds (GC/MS)

Analysis Method: 8260B	Analysis Batch: 280-333972	Instrument ID: VMS_G2
Prep Method: 5030B	Prep Batch: N/A	Lab File ID: G2_0457.D
Dilution: 1.0		Initial Weight/Volume: 20 mL
Analysis Date: 07/18/2016 1126		Final Weight/Volume: 20 mL
Prep Date: 07/18/2016 1126		

Analyte	Result (ug/L)	Qualifier	RL
1,1,1-Trichloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
1,1,2-Trichloroethane	ND		3.0
1,1-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
1,2-Dichloroethane	ND		1.0
1,2-Dichloropropane	ND		1.0
Benzene	ND		5.0
Bromodichloromethane	6.6		1.0
Bromoform	6.4		4.0
Bromomethane	ND		10
Carbon tetrachloride	ND		1.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
cis-1,3-Dichloropropene	ND		5.0
Dibromochloromethane	11		5.0
Ethylbenzene	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
trans-1,2-Dichloroethene	ND		10
Trichloroethene	ND		5.0
Vinyl chloride	ND		2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	112		70 - 127
4-Bromofluorobenzene (Surr)	92		78 - 120
Dibromofluoromethane (Surr)	113		77 - 120
Toluene-d8 (Surr)	100		80 - 125

## Analytical Data

Client: Waste Management

Job Number: 280-85464-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 280-85464-2TB

Client Matrix: Water

Date Sampled: 07/12/2016 0000

Date Received: 07/12/2016 1555

### 8260B Volatile Organic Compounds (GC/MS)

Analysis Method:	8260B	Analysis Batch:	280-333972	Instrument ID:	VMS_G2
Prep Method:	5030B	Prep Batch:	N/A	Lab File ID:	G2_0451.D
Dilution:	1.0			Initial Weight/Volume:	20 mL
Analysis Date:	07/18/2016 0928			Final Weight/Volume:	20 mL
Prep Date:	07/18/2016 0928				

Analyte	Result (ug/L)	Qualifier	RL
1,1,1-Trichloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
1,1,2-Trichloroethane	ND		3.0
1,1-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
1,2-Dichloroethane	ND		1.0
1,2-Dichloropropane	ND		1.0
Benzene	ND		5.0
Bromodichloromethane	ND		1.0
Bromoform	ND		4.0
Bromomethane	ND		10
Carbon tetrachloride	ND		1.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
cis-1,3-Dichloropropene	ND		5.0
Dibromochloromethane	ND		5.0
Ethylbenzene	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
trans-1,2-Dichloroethene	ND		10
Trichloroethene	ND		5.0
Vinyl chloride	ND		2.0

Surrogate	%Rec	Qualifier	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	129	X	70 - 127
4-Bromofluorobenzene (Surr)	108		78 - 120
Dibromofluoromethane (Surr)	129	X	77 - 120
Toluene-d8 (Surr)	117		80 - 125

## DATA REPORTING QUALIFIERS

Client: Waste Management

Job Number: 280-85464-1

Lab Section	Qualifier	Description
GC/MS VOA	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
	X	Surrogate is outside control limits

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC/MS VOA</b>					
<b>Analysis Batch:280-333972</b>					
LCS 280-333972/4	Lab Control Sample	T	Water	8260B	
MB 280-333972/6	Method Blank	T	Water	8260B	
280-85437-G-1 MS	Matrix Spike	T	Water	8260B	
280-85437-G-1 MSD	Matrix Spike Duplicate	T	Water	8260B	
280-85464-1	RIG WATER	T	Water	8260B	
280-85464-2TB	TRIP BLANK	T	Water	8260B	

#### Report Basis

T = Total

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

### Surrogate Recovery Report

#### 8260B Volatile Organic Compounds (GC/MS)

##### Client Matrix: Water

Lab Sample ID	Client Sample ID	DCA %Rec	BFB %Rec	DBFM %Rec	TOL %Rec
280-85464-1	RIG WATER	112	92	113	100
280-85464-2	TRIP BLANK	129X	108	129X	117
MB 280-333972/6		114	97	114	104
LCS 280-333972/4		106	89	105	94
280-85437-G-1 MS		117	90	112	97
280-85437-G-1 MSD		116	92	113	100

Surrogate	Acceptance Limits
DCA = 1,2-Dichloroethane-d4 (Surr)	70-127
BFB = 4-Bromofluorobenzene (Surr)	78-120
DBFM = Dibromofluoromethane (Surr)	77-120
TOL = Toluene-d8 (Surr)	80-125

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

**Method Blank - Batch: 280-333972**

**Method: 8260B**

**Preparation: 5030B**

Lab Sample ID: MB 280-333972/6  
 Client Matrix: Water  
 Dilution: 1.0  
 Analysis Date: 07/18/2016 0822  
 Prep Date: 07/18/2016 0822  
 Leach Date: N/A

Analysis Batch: 280-333972  
 Prep Batch: N/A  
 Leach Batch: N/A  
 Units: ug/L

Instrument ID: VMS\_G2  
 Lab File ID: G2\_0448.D  
 Initial Weight/Volume: 20 mL  
 Final Weight/Volume: 20 mL

Analyte	Result	Qual	RL
1,1,1-Trichloroethane	ND		5.0
1,1,2,2-Tetrachloroethane	ND		5.0
1,1,2-Trichloroethane	ND		3.0
1,1-Dichloroethane	ND		5.0
1,1-Dichloroethene	ND		5.0
1,2-Dichloroethane	ND		1.0
1,2-Dichloropropane	ND		1.0
Benzene	ND		5.0
Bromodichloromethane	ND		1.0
Bromoform	ND		4.0
Bromomethane	ND		10
Carbon tetrachloride	ND		1.0
Chlorobenzene	ND		5.0
Chloroethane	ND		10
Chloroform	ND		5.0
Chloromethane	ND		10
cis-1,3-Dichloropropene	ND		5.0
Dibromochloromethane	ND		5.0
Ethylbenzene	ND		5.0
Tetrachloroethene	ND		5.0
Toluene	ND		5.0
trans-1,2-Dichloroethene	ND		10
Trichloroethene	ND		5.0
Vinyl chloride	ND		2.0

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	114	70 - 127
4-Bromofluorobenzene (Surr)	97	78 - 120
Dibromofluoromethane (Surr)	114	77 - 120
Toluene-d8 (Surr)	104	80 - 125

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

Lab Control Sample - Batch: 280-333972

Method: 8260B

Preparation: 5030B

Lab Sample ID:	LCS 280-333972/4	Analysis Batch:	280-333972	Instrument ID:	VMS_G2
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	G2_0447.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	20 mL
Analysis Date:	07/18/2016 0803	Units:	ug/L	Final Weight/Volume:	20 mL
Prep Date:	07/18/2016 0803				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
1,1,1-Trichloroethane	5.00	5.86	117	65 - 135	
1,1-Dichloroethane	5.00	5.39	108	65 - 135	
1,1-Dichloroethene	5.00	5.51	110	65 - 136	
1,2-Dichloropropane	5.00	5.34	107	64 - 135	
1,3-Dichlorobenzene	5.00	5.07	101	65 - 135	
Benzene	5.00	5.39	108	65 - 135	
Bromodichloromethane	5.00	5.42	108	65 - 135	
Carbon tetrachloride	5.00	6.06	121	65 - 135	
Chlorobenzene	5.00	5.18	104	65 - 135	
Chloroform	5.00	5.67	113	65 - 135	
Ethylbenzene	5.00	5.16	103	65 - 135	
Methylene Chloride	5.00	5.08	102	54 - 141	
Tetrachloroethene	5.00	5.57	111	65 - 135	
Toluene	5.00	5.46	109	65 - 135	
trans-1,2-Dichloroethene	5.00	5.69	114	65 - 135	J
Trichloroethene	5.00	5.62	112	65 - 135	

Surrogate	% Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	106	70 - 127
4-Bromofluorobenzene (Surr)	89	78 - 120
Dibromofluoromethane (Surr)	105	77 - 120
Toluene-d8 (Surr)	94	80 - 125

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-333972**

**Method: 8260B  
Preparation: 5030B**

MS Lab Sample ID: 280-85437-G-1 MS  
Client Matrix: Water  
Dilution: 1.0  
Analysis Date: 07/18/2016 1047  
Prep Date: 07/18/2016 1047  
Leach Date: N/A

Analysis Batch: 280-333972  
Prep Batch: N/A  
Leach Batch: N/A

Instrument ID: VMS\_G2  
Lab File ID: G2\_0455.D  
Initial Weight/Volume: 20 mL  
Final Weight/Volume: 20 mL

MSD Lab Sample ID: 280-85437-G-1 MSD  
Client Matrix: Water  
Dilution: 1.0  
Analysis Date: 07/18/2016 1107  
Prep Date: 07/18/2016 1107  
Leach Date: N/A

Analysis Batch: 280-333972  
Prep Batch: N/A  
Leach Batch: N/A

Instrument ID: VMS\_G2  
Lab File ID: G2\_0456.D  
Initial Weight/Volume: 20 mL  
Final Weight/Volume: 20 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
1,1,1-Trichloroethane	118	118	65 - 135	0	20		
1,1-Dichloroethane	112	112	65 - 135	0	21		
1,1-Dichloroethene	112	114	65 - 136	2	20		
1,2-Dichloropropane	105	107	64 - 135	2	20		
1,3-Dichlorobenzene	97	102	65 - 135	5	20		
Benzene	108	109	65 - 135	2	20		
Bromodichloromethane	108	110	65 - 135	2	20		
Carbon tetrachloride	119	119	65 - 135	0	21		
Chlorobenzene	102	105	65 - 135	3	20		
Chloroform	115	116	65 - 135	1	20		
Ethylbenzene	99	103	65 - 135	4	20		
Methylene Chloride	106	107	54 - 141	1	26		
Tetrachloroethene	104	109	65 - 135	4	20		
Toluene	106	108	65 - 135	2	20		
trans-1,2-Dichloroethene	113	113	65 - 135	0	24		
Trichloroethene	107	109	65 - 135	1	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
1,2-Dichloroethane-d4 (Surr)	117	116	70 - 127
4-Bromofluorobenzene (Surr)	90	92	78 - 120
Dibromofluoromethane (Surr)	112	113	77 - 120
Toluene-d8 (Surr)	97	100	80 - 125

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-333972**

**Method: 8260B  
Preparation: 5030B**

MS Lab Sample ID: 280-85437-G-1 MS      Units: ug/L  
Client Matrix: Water  
Dilution: 1.0  
Analysis Date: 07/18/2016 1047  
Prep Date: 07/18/2016 1047  
Leach Date: N/A

MSD Lab Sample ID: 280-85437-G-1 MSD  
Client Matrix: Water  
Dilution: 1.0  
Analysis Date: 07/18/2016 1107  
Prep Date: 07/18/2016 1107  
Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
1,1,1-Trichloroethane	ND	5.00	5.00	5.92	5.90
1,1-Dichloroethane	ND	5.00	5.00	5.59	5.62
1,1-Dichloroethene	ND	5.00	5.00	5.61	5.70
1,2-Dichloropropane	ND	5.00	5.00	5.25	5.37
1,3-Dichlorobenzene	ND	5.00	5.00	4.86	5.10
Benzene	ND	5.00	5.00	5.38	5.47
Bromodichloromethane	ND	5.00	5.00	5.41	5.52
Carbon tetrachloride	ND	5.00	5.00	5.97	5.95
Chlorobenzene	ND	5.00	5.00	5.08	5.25
Chloroform	ND	5.00	5.00	5.73	5.79
Ethylbenzene	ND	5.00	5.00	ND	5.14
Methylene Chloride	ND	5.00	5.00	5.31	5.36
Tetrachloroethene	ND	5.00	5.00	5.22	5.43
Toluene	ND	5.00	5.00	5.29	5.39
trans-1,2-Dichloroethene	ND	5.00	5.00	ND	ND
Trichloroethene	ND	5.00	5.00	5.36	5.43

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

### Laboratory Chronicle

Lab ID: 280-85464-1

Client ID: RIG WATER

Sample Date/Time: 07/12/2016 11:00 Received Date/Time: 07/12/2016 15:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-85464-B-1		280-333972		07/18/2016 11:26	1	TAL DEN	DPI
A:8260B	280-85464-B-1		280-333972		07/18/2016 11:26	1	TAL DEN	DPI

Lab ID: 280-85464-2

Client ID: TRIP BLANK

Sample Date/Time: 07/12/2016 00:00 Received Date/Time: 07/12/2016 15:55

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-85464-A-2		280-333972		07/18/2016 09:28	1	TAL DEN	DPI
A:8260B	280-85464-A-2		280-333972		07/18/2016 09:28	1	TAL DEN	DPI

Lab ID: MB

Client ID: N/A

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	MB 280-333972/6		280-333972		07/18/2016 08:22	1	TAL DEN	DPI
A:8260B	MB 280-333972/6		280-333972		07/18/2016 08:22	1	TAL DEN	DPI

Lab ID: LCS

Client ID: N/A

Sample Date/Time: N/A Received Date/Time: N/A

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	LCS 280-333972/4		280-333972		07/18/2016 08:03	1	TAL DEN	DPI
A:8260B	LCS 280-333972/4		280-333972		07/18/2016 08:03	1	TAL DEN	DPI

Lab ID: MS

Client ID: N/A

Sample Date/Time: 07/11/2016 14:10 Received Date/Time: 07/12/2016 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-85437-G-1 MS		280-333972		07/18/2016 10:47	1	TAL DEN	DPI
A:8260B	280-85437-G-1 MS		280-333972		07/18/2016 10:47	1	TAL DEN	DPI

## Quality Control Results

Client: Waste Management

Job Number: 280-85464-1

### Laboratory Chronicle

Lab ID: MSD

Client ID: N/A

Sample Date/Time: 07/11/2016 14:10 Received Date/Time: 07/12/2016 09:30

Method	Bottle ID	Run	Analysis Batch	Prep Batch	Date Prepared / Analyzed	Dil	Lab	Analyst
P:5030B	280-85437-G-1 MSD		280-333972		07/18/2016 11:07	1	TAL DEN	DPI
A:8260B	280-85437-G-1 MSD		280-333972		07/18/2016 11:07	1	TAL DEN	DPI

#### Lab References:

TAL DEN = TestAmerica Denver

# Chain of Custody Record

<b>Client Information</b> Client Contact: <u>Tom Schweitzer</u> Company: <u>Waste Management</u> Address: <u>2400 West Union Avenue</u> City: <u>Englewood</u> State, Zip: <u>CO 80110</u> Phone: <u>303 914-1445</u> Email: <u>tschweitzer@wrm.com</u> Project Name: <u>5551 Denver/Arapahoe Chem.</u> Event Desc: <u>Seam Anomaly Wells May/Nov Well Test</u> Site: <u>Colorado</u>		Lab Pmt: <u>Sara, Betsy A</u> E-Mail: <u>betsy.sara@testamericainc.com</u> Camer Tracking No(s): Job #:		COC No: <u>280-23617-7662.1</u> Page:	
Due Date Requested: <u>STANDARD</u> TAT Requested (days): PO #: <u>162063.01</u> WO #:		<b>Analysis Requested</b>			
Sample Identification <u>Big Water</u> <u>Trip Blank</u>		Sample Date <u>07/21/16</u> <u>07/21/16</u>	Sample Type (C=Comp, G=grab) <u>G</u> <u>-</u>	Matrix (W=water, S=solid, O=other) <u>W</u> <u>W</u>	Field Filtered Sample (Yes or No) <u>X</u> <u>X</u>
Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)			
Special Instructions/Note: Total Number of containers:		Special Instructions/Note: 3 10A 1 10A			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)					
Empty Kit Relinquished by:					
Relinquished by: <u>Cathy Spivey</u> Date/Time: <u>07/21/16 1400</u>		Relinquished by: <u>Tom Schweitzer</u> Date/Time: <u>7/21/16 1500</u>		Relinquished by: <u>Tom Schweitzer</u> Date/Time: <u>7/21/16 1500</u>	
Relinquished by: <u>Tom Schweitzer</u> Date/Time: <u>7/21/16 1500</u>		Relinquished by: <u>Tom Schweitzer</u> Date/Time: <u>7/21/16 1500</u>		Relinquished by: <u>Tom Schweitzer</u> Date/Time: <u>7/21/16 1500</u>	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>16.4+0.0 TR5 DW 7/21/16</u>	

## Login Sample Receipt Checklist

Client: Waste Management

Job Number: 280-85464-1

Login Number: 85464

List Source: TestAmerica Denver

List Number: 1

Creator: White, Denise E

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

**ATTACHMENT 6**

**COPY OF WELL ABANDONMENT REPORT (FORM GWS-09) (NOT SUBMITTED TO OSE  
BUT TO BE RETAINED IN WMC FILES)**

Form No.  
GWS-09  
4/2012

**STATE OF COLORADO, OFFICE OF THE STATE ENGINEER**  
821 Centennial Bldg., 1313 Sherman St., Denver, CO 80203  
(303) 866-3581 Fax (303) 866-3589 [dwrpermitsonline@state.co.us](mailto:dwrpermitsonline@state.co.us)

For Office Use Only

### WELL ABANDONMENT REPORT

Use to report plugging and sealing of permitted wells, monitoring and other holes. This form can be computer generated, typed or printed in black or blue ink. Instructions and plugging standards are on reverse side of form.

**Well Permit Number of the well being plugged** NA **or**  
**MH File Number MH-** NA **Hole ID #/Name** P-114A

Individual/Company responsible for plugging and sealing the well:

Name(s) Swift River Environmental Services

Mailing Address 26 West Dry Creek Circle, Suite 470

City, St., Zip Littleton, CO 80120

Phone (area code & no.) 303-695-4660 Email: cathryn.stewart@swiftriveres.com

Well (Hole) Owner:

NAME(S) Waste Management of Colorado, Inc. Phone (include area code) 303-914-1445

Mailing Address, City, St., Zip 2400 West Union Avenue, Englewood, CO 80110

ACTUAL WELL LOCATION: County Arapahoe County

Property Address, City, St, Zip 3500 South Gun Club Road, Aurora, CO 80018

NW 1/4 of the SE 1/4, Sec. 32, Twp. 4 ☐ N. or ☒ S., Range 65 ☐ E. or ☒ W., 6th P.M.

Distance from Section Lines 1900.0 Ft. from ☐ N. or ☒ S., 2080.6 Ft. from ☒ E. or ☐ W. Line.

Subdivision Name NA Lot NA, Block NA, Filing/Unit NA

Optional: GPS well location information in UTM format. You must check GPS unit for required settings as follows:

Format must be UTM, zone 12 ☐ or zone 13 ☒; Units must be meters; Datum must be NAD83; Unit must be set to true north.

**Easting** --- **Northing** ---

I (we) report the existing well (hole) was plugged and sealed on the date of 07/14/16 for the following reason(s):

- ☐ The well was plugged and sealed as required under Well Permit Number \_\_\_\_\_.
- ☐ The well was not in use and was plugged and sealed.
- ☒ Other (please explain) Well integrity was compromised and well was abandoned.

The well was plugged with the following materials placed at the indicated intervals:

Amount and Type of Material	Method of Placement	Interval
Sand (Vol = 1.3 cubic ft)	Direct	from 75 feet to 136 feet
Grout (Vol = 1.6 cubic ft)	Direct	from 1 feet to 75 feet
Soil (Vol = 1.4 cubic ft)	Direct	from 0 feet to 4 feet
<b>Intervals of casing removed/ripped in feet</b>		from _____ feet to _____ feet

Report must be signed or name entered by person who performed the well plugging work or by the well owner if this person is unknown or not reachable. I (we) have read the statements made herein, know the contents thereof, and that they are true to my (our) knowledge.

Sign or enter full name

If signing print name & title

Date (mm/dd/yyyy)

Cathryn Stewart, Project Manager

It is the responsibility of the well owner to have the well/hole properly plugged and sealed. The Well Construction Contractor is responsible for notifying the owner of this requirement.

**Attachment B**

## Waste Analysis Plan

## **1.0 POST-CLOSURE WASTE STREAM**

There will be two waste streams during post-closure of the facility:

- liquids that will be pumped from the reconstructed cell sumps, and
- groundwater which will be pumped during groundwater monitoring sampling events.

### **1.1 Leachate**

#### **A. Primary Leachate Collection Sump**

The source of water for the leachate that is being collected in the primary leachate collection sump of the reconstructed cell is precipitation that fell on the reconstructed cell from the time that construction of the primary liner system began until the first layer of the cap system (two feet of compacted clay) was complete on November 8, 1988. There were only three significant precipitation events during that time period.

The first rainfall (approximately 1-1/2 inches on June 13, 1988) occurred after placement of the 60 mil high density polyethylene (HDPE) synthetic liner over the 18-inch clay liner when the 12-inch sand and geotextile leachate collection system was about 70% complete. Water from this rainfall event saturated the sand drainage layer.

The second and third rainfall events (approximately 1/2 inch on August 3, 1988, and approximately 1/2 inch on September 12, 1988) occurred after all the Pad C material had been placed in the reconstructed cell and after this material was covered with a temporary clay cover that was constructed out of the Pad C liner material. This temporary cover was constructed with a depression for collecting any rainwater that fell on the reconstructed cell. Water from the second and third precipitation events that collected in this depression was pumped within 12 hours into Pond 3 for subsequent stabilization and it is, therefore, unlikely that water that collected in the depression seeped through the temporary clay cover.

Thus, on the basis of this construction history, the water that collects in the primary leachate collection sump is expected to be clean water that has come in contact with the sand layer only. There is a possibility, however, that some of the water from the second and third precipitation events may have percolated through the temporary two-foot clay cover, and after slowly migrating through the waste material underlying the temporary clay cover, this water will ultimately be collected in the primary

leachate collection sump. Additionally, other nominal precipitation events occurring during the placement of the Pad C waste material into the reconstructed cell may result in contaminated leachate reaching the primary leachate collection sump.

**B. Secondary Leachate Collection sump**

There is no indication that any leachate from the primary leachate collection system has leaked into the secondary leachate collection system. Thus, leachate collecting in the secondary leachate collection system is expected to consist solely of construction water within the 18-inch compacted clay layer portion of the primary composite liner. The weight of the waste placed in the reconstructed cell has squeezed, and will continue to squeeze, some of the construction water out, and that water drains to and is collected in the secondary leachate collection sump. None of that water should come into contact with or be mixed with hazardous waste assuming the primary liner is not leaking.

**C. Management of Leachate**

Leachate from the sumps could be classified as an F039 hazardous waste if the leachate contains liquids that have percolated through land disposed wastes. Once removed from the sumps, leachate will be managed and disposed in accordance with applicable state and federal regulations.

**1.2 Groundwater**

The second waste stream will be groundwater which will be collected during the groundwater monitoring programs. Groundwater will be stored in drums during groundwater monitoring sampling events and will be disposed of appropriately after receiving analytical results. If the groundwater does not contain any contaminants above background (in accordance with Appendix F, including QA/QC verification and resampling as appropriate), it may be disposed of on the ground and such disposal area will not be considered a solid waste management unit. If the groundwater contains contaminants above background (as determined in accordance with Appendix F, including QA/QC verification and resampling as appropriate), it will be disposed of in accordance with applicable state and federal regulations.

**Attachment C**

# Inspection and Maintenance Plan

## **1.0 INSPECTION AND MAINTENANCE PLAN**

Post-closure inspections will be conducted at the reconstructed cell facility and documented by the Permittee for the duration of the post-closure care period. A list of the inspections to be performed, their frequency and maintenance time frames will be kept by the Permittee. The inspection program is detailed below.

### **INSPECTION AND MAINTENANCE PLAN**

(a) Groundwater wells visually inspected and monitored semiannually for:

1. Broken seals or caps;
2. Nonfunctional pumps;
3. Cracked casings;
4. Other broken or malfunctioning equipment; and
5. Adequate labeling.

(b) Piezometers visually inspected semiannually for:

1. Broken seals or caps;
2. Cracked casings;
3. Other broken equipment; and
4. Adequately painted and labeled.

(c) Reconstructed cell cover visually inspected at least semi-annually for the duration of the post-closure care period, and after all extreme weather events (tornados and 25-year, 24-hour precipitation events) and if any accident (such as a plane crash) occurs at the reconstructed cell, for:

1. Cracks;
2. Holes;
3. Other breaches of the cell cap;
4. Rodent burrows;
5. Consistency of gravel cover;
6. Erosion of cap;
7. Evidence of subsidence; and
8. Plants and corresponding roots that may penetrate and jeopardize the integrity of the reconstructed cell cover, which will be managed by pulling, cutting or herbicides.

(d) Drainage channels and culverts inspected at least semi-annually for the duration of the post-closure care period, and after all extreme weather events and if any accident occurs at the reconstructed cell, for:

1. Blockages (such as excessive vegetation); and
2. Erosive damage.

- (e) Perched water drain inspected at least semi-annually for the duration of the post-closure care period, and after all extreme weather events and if any accident occurs at the reconstructed cell.
- (f) Benchmarks inspected semi-annually for any observable damage or movement.

(g) Security fence inspected at least semi-annually for:

1. Broken or cut sections in chain link or barbed wire;
2. Burrows under fence;
3. Damaged or defective locks; and
4. Signs and their visibility.

(h) Leachate collection system inspected at least semi-annually for the duration of the post-closure care period for:

1. Presence and depth of fluid in each of the primary and secondary sumps;
2. Nonfunctioning or broken pipe;
3. Nonfunctioning or broken sump cover;
4. Nonfunctioning or broken casing;
5. Nonfunctioning or broken pump.
6. Collect and analyze leachate samples collected from the primary and secondary sump for constituents and with the detection limits in Table G-1 of Appendix G.

The leachate will be pumped from the sumps on a periodic basis as necessary to prevent significant accumulation. Leachate will be removed from the primary and secondary sumps so that there will be no more than one foot of leachate above either the leachate removal liner system or the leachate detection liner system (exclusive of the sumps themselves). The amount of leachate removed and rate of leachate generation will be determined for each sump, recorded in the inspection logs each time the sumps are pumped, and reported annually to the Director, or designee.

(i) All emergency response equipment listed in the Contingency Plan (Appendix D) must be inspected at least semi-annually.

Repairs or replacements to all of the above will be initiated within thirty (30) calendar days from the date that they are noted. Defective locks on gates will be repaired or replaced immediately.

Figures C-1 to C-3 at the end of this section present the inspection checklists. These checklists will be filled out every time the Permittee inspects the reconstructed cell facility during the post-closure care period. The checklists may vary from those contained in this section, provided the same information is contained in the revised forms. Figure C-4 presents the repair certification that will be filled out for all repairs undertaken. Repairs will be conducted to return inspected item to their original function. The cell cover will be filled with appropriate soil and rock fill material after repairs. The checklists and repair certifications will be maintained in a file at the post-closure operational office designated by the Permittee and copies will be sent to the Director, or designee, on an annual basis.

## FIGURES

INSPECTION FORM FOR  
MONITORING WELLS, PIEZOMETERS  
AND BENCHMARKS

Date: \_\_\_\_\_  
Inspected by: \_\_\_\_\_  
Supervisor: \_\_\_\_\_  
Page \_\_\_\_\_ of \_\_\_\_\_

Purpose of Inspection: \_\_\_\_\_

WELL NUMBER	DATE OF INSPECTION	DEPTH TO WATER	CONDITION/REMARKS*
P-112			
P-113			
P-114A			
P-115			

Inspect wells for broken seals or caps, nonfunctional pumps, cracked casings, other broken or malfunctioning equipment, and labeling.

PIEZOMETER NUMBER	DATE OF INSPECTION	DEPTH TO WATER	CONDITION/REMARKS*

Inspect piezometers for broken seals or caps, cracked casings, other broken equipment, painting and labeling.

BENCHMARK INSPECTION	DATE OF INSPECTION	CONDITION/REMARKS*

Inspect benchmarks for any observable damage or movement.

Any repair required? If yes, notify the Project Manager and complete a repair certification.	YES	NO

\*If additional explanation is required, complete on separate page(s) and attach hereto.

Figure C-1

INSPECTION FORM FOR THE  
LEACHATE COLLECTION SYSTEM

Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_

Supervisor: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Purpose of Inspection: \_\_\_\_\_

SUMP	DATE OF INSPECTION	CONDITION/REMARKS*
Primary		
Secondary		

Inspect the leachate collection system for presence and depth of fluids in the primary sump, nonfunctioning or broken pipe(s), nonfunctioning or broken sump cover(s), nonfunctioning or broken casing, and nonfunctioning or broken pump(s).

If liquids are present in the primary sump, provide information specified below as applicable.

Depth to bottom of sump \_\_\_\_\_  
 Depth to liquid \_\_\_\_\_  
 Depth of liquid \_\_\_\_\_  
 Liquids generation rate (to be calculated when the sump is pumped) \_\_\_\_\_  
 Gallons of liquid removed \_\_\_\_\_  
 Were liquids samples taken for analysis? \_\_\_\_\_

If liquids are present in the secondary sump, provide information specified below as applicable.

Depth to bottom of sump \_\_\_\_\_  
 Depth to liquid \_\_\_\_\_  
 Depth of liquid \_\_\_\_\_  
*Samples Collected for Analysis* \_\_\_\_\_  
 Liquids generation rate (to be calculated when the sump is pumped) \_\_\_\_\_  
 Gallons of liquid removed \_\_\_\_\_  
 Were liquids samples taken for analysis? \_\_\_\_\_

Any repair required? If yes, notify the Project Manager and complete a repair certification.	YES	NO

\*If additional explanation is required, complete on separate page(s) and attach hereto.

INSPECTION FORM FOR THE  
RECONSTRUCTED CELL COVER,  
DRAINAGE CHANNELS, THE PERCHED  
WATER DRAIN, AND SECURITY FENCE

Date: \_\_\_\_\_  
Inspected by: \_\_\_\_\_  
Supervisor: \_\_\_\_\_  
Page \_\_\_\_\_ of \_\_\_\_\_

Purpose of Inspection: \_\_\_\_\_

	DATE OF INSPECTION	CONDITION/REMARKS*	
RECONSTRUCTED CELL COVER			
Inspect cell cover for: cracks, holes, other breaches of the cap, rodent burrows, consistency of gravel cover, erosion of cap, and evidence of subsidence.			
DRAINAGE CHANNEL	DATE OF INSPECTION	CONDITION/REMARKS*	
DITCH 'A'			
DITCH 'B'			
Inspect ditches for blockages and erosive damage.			
	DATE OF INSPECTION	CONDITION/REMARKS*	
PERCHED WATER DRAIN			
Inspect drain for blockages.			
	DATE OF INSPECTION	CONDITION/REMARKS*	
SECURITY FENCE			
Inspect security fence for broken or cut sections in chain link or barbed wire, burrows under fence, damaged or defective locks, and signs.			
Any repair required? If yes, notify the Project Manager and complete a repair certification.		YES	NO
*If additional explanation is required, complete on separate page(s) and attach hereto.			

Figure C-3

REPAIR CERTIFICATION

Date: \_\_\_\_\_

Repaired by: \_\_\_\_\_

Supervisor: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Item Being Repaired: \_\_\_\_\_

Description of Repair: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Repair began on: \_\_\_\_\_ and was completed on: \_\_\_\_\_

Other Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Attachment D**

## Contingency Plan

## **1.0 FACILITY DESCRIPTION**

The facility contains only one RCRA regulated hazardous waste management unit which is the closed reconstructed cell. In addition, the facility has a groundwater monitoring system, drainage channels and two leachate collection systems.

## **2.0 IMPLEMENTATION OF RESPONSE PROCEDURES**

During the post-closure care period, at least one individual will be on call (i.e., available to arrive at the facility or respond to an emergency within a short, less than three hour, period of time) at all times. This person, designated the Emergency Coordinator (EC) or their alternate, will be familiar with all aspects of the Contingency Plan, the location of all records for the facility and the facility layout. In addition, the EC is responsible for coordinating all emergency response measures and has been granted the authority to commit the resources needed to carry out the Contingency Plan.

Since the facility is closed and the only regulated hazardous waste management unit has been capped, the probability of a fire or explosion at the site is very remote. The only type of emergency of concern at the facility would involve the release of hazardous materials to the surrounding environment (i.e., air, soil or groundwater) which could occur during a groundwater sampling event, leachate removal operations or catastrophe. In the event of such an emergency, response activities will be initiated immediately following observation of the event. The EC will assess the situation, determine whether to implement the Contingency Plan, and direct response activities as appropriate.

### **2.1 Observation**

In case of an imminent or actual release of hazardous waste, the person observing the event will:

- Notify the Emergency Coordinator and report his/her name and the location and the nature of the incident.

The names, addresses and telephone numbers of the EC and his/her alternates and agencies that might be notified are listed as follows:

Mr. Mickey Muterspaugh: Emergency Coordinator  
Denver Arapahoe Disposal Site  
3500 S. Gun Club Road  
Aurora, Colorado 80018  
(720) 876-2630 (office)  
(720) 498-5175(cell)

Mr. Patrick Mekled: Alternate Emergency Coordinator  
Denver Arapahoe Disposal Site  
3500 S. Gun Club Road  
Aurora, Colorado 80018  
(720) 876-2629 (office)  
(303) 435-2812 (cell)

## **2.2 Incident Assessment**

The EC, or his/her representative, will immediately identify to the extent possible the character, exact source, amount and areal extent of any released materials by observation, records review and, if necessary, chemical analysis. While characterizing the release, the EC will assess possible direct and indirect hazards to human health and the environment that may result from the release. Based on a visual inspection of the release and reference to data sources, the EC will assess the following:

- Could the event threaten human health or the environment? If so, the Contingency Plan will be implemented.
- Can personnel control the emergency? If not, the EC will immediately notify the appropriate federal, state and local agencies to request assistance.

No scenarios that would require evacuation of the facility or the surrounding area are envisioned.

## **3.0 IMPLEMENTATION OF CONTINGENCY PLAN**

When the decision has been made to implement the Contingency Plan, the EC (or his/her designee) will immediately notify the following:

- Facility personnel, if they have not already been notified;
- The National Response Center (NRC) at (800) 424-8802 and report the following information:
  - Name and telephone number of reporter;
  - Name and address of facility;
  - Time and type of incident;
  - Name and quantity of material(s) involved, to the extent known;
  - The extent of injuries, if any; and
  - Possible hazards to human health and the environment outside the facility.

- Colorado Department of Public Health and Environment at the emergency number: (303) 692-3020 or 756-4455 (after hours). The report must include the same information as the report to the NRC.
- Arapahoe County Sheriff's Department (telephone 911), if appropriate.

In addition, the EC will direct coordination of first aid activities (if any injuries are involved) and the emergency response activities of other personnel.

## **4.0 RESPONSE ACTIVITIES**

### **4.1 Emergency Coordinator**

Containment and control activities are initiated and directed by the EC. During an emergency, the EC must take all reasonable measures necessary to ensure that releases do not occur, recur or spread. These measures will include, where appropriate, the collection and containment of released material (e.g., leachate, contaminated groundwater).

The EC has the authority to obtain assistance in the event of an emergency. For a release, the EC will mobilize personnel to:

- Assemble the required response equipment, such as protective clothing, gear and pumping equipment;
- Determine the most appropriate containment method; and
- Coordinate activities of supervisory personnel, maintaining constant communication with them and the response teams.

### **4.2 Standard Response Procedures**

Individuals discovering the incident will initiate the following standard response procedures immediately. These procedures only establish general guidelines. The EC has the final authority over all response procedures once he/she has arrived at the area of the incident.

- The person discovering an incident will alert others who might be in danger and call for backup support.
- All response personnel will have proper safety equipment.

### **4.3 Equipment**

At a minimum, fire extinguishers, absorbent, shovels, personal protective clothing, decontamination equipment, communication devices (e.g., radios, cell phones, etc.) and first-aid kits will be kept in vehicles used by personnel conducting inspections, maintenance, leachate collection handling and groundwater sampling. In the event of an emergency, the Permittee or individual(s) discovering the incident will deploy necessary and appropriate emergency equipment.

## **5.0 POST-EMERGENCY PROCEDURES**

Post-emergency procedures are designed to prevent recurrence, to clean up and dispose of residuals and to provide for personnel debriefing.

### **5.1 Incident Reporting**

Within 15 days of the incident, a written report of the incident must be filed with the CDPHE and the U.S. EPA Regional Office:

Colorado Department of Public Health and Environment  
Hazardous Materials and Waste Management Division  
HMWMD-HWC-B2  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

Regional Administrator  
Environmental Protection Agency  
Region VIII  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

This report must include:

- Name, address and telephone number of the Permittee;
- Name, address and telephone number of facility;
- Date, time and type of incident;
- Name and quantity of material(s) involved;
- The extent of injuries, if any;

- An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

## **5.2 Prevention of Recurrence**

The EC will take all reasonable measures to identify the cause of the incident and take steps to ensure that the incident does not recur. These steps may include; as appropriate:

- Visual inspections for leaks, cracks and perforations to the reconstructed cell; and
- Collection and isolation of all leachate from the primary and secondary sumps and groundwater monitoring wells.

## **5.3 Treatment and Disposal of Released Materials and Residue Cleanup**

Once the emergency situation has ended, the EC will initiate clean-up and disposal of contaminated materials as soon as possible to avoid further contamination. Contaminated material will be analyzed, stored, loaded, manifested, transported and disposed of in accordance with applicable state and federal regulations.

## **5.4 Equipment Decontamination and Maintenance**

After cleanup procedures are completed, all equipment that was used during the cleanup will be decontaminated and readied for future use. Pressure washing (with collection of rinse water) is the most likely decontamination method. Rinse water will be treated as a waste and disposed of appropriately.

## **5.5 Personnel Debriefing**

The EC will conduct debriefings of personnel and local authorities, as appropriate, to assess preparedness and prevention activities, response activities and casualty control. Based on this review, suggestions for revisions to the Contingency Plan, if any, will be reviewed and implemented where appropriate.

**Attachment E**

## Restrictive Notice

**This property is subject to a Notice of Environmental Use Restrictions imposed by the Colorado Department of Public Health and Environment pursuant to section 25-15-321.5, Colorado Revised Statutes**

**NOTICE OF ENVIRONMENTAL USE RESTRICTIONS**

WHEREAS, WMC is the owner of a certain property commonly referred to as the Denver Arapahoe Chemical Waste Processing Facility ("DACWPF"), located at 25700 East Yale Avenue, Aurora, Colorado, more particularly described in Exhibit A, attached hereto and incorporated herein by reference as though fully set forth (hereinafter referred to as the "Property"); and

WHEREAS, the Hazardous Materials and Waste Management Division of the Colorado Department of Public Health and the Environment ("the Department"), which is located at 4300 Cherry Creek Drive South, Denver, Colorado 80246-1530, is authorized to issue Notices of Environmental Use Restrictions (a/k/a "Restrictive Notices") pursuant to § 25-15-320(4)(a) of the Colorado Hazardous Waste Act, § 25-15-101, et seq., C.R.S. ("CHWA"); and

WHEREAS, the Restricted Area, which is delineated in yellow on Exhibit B, attached hereto and incorporated herein by reference as though fully set forth, has been used to manage hazardous waste; DACWPF is closed; the Department and WMC believe no hazardous wastes have been released from the landfill cell, and this Restrictive Notice is entered into to protect DACWPF, which is subject to a State issued Resource Conservation and Recovery Act, 42 U.S.C. §§ 6926, et seq. ("RCRA") Permit pursuant to the CHWA; and

WHEREAS, a survey plat and a record of the type, location, and quantity of hazardous wastes disposed of at DACWPF have been filed with the local zoning authority and with the Director of the Department; and

WHEREAS, the purpose of this Restrictive Notice is to ensure protection of human health and the environment by documenting the fact that hazardous wastes have been disposed at DACWPF by restricting certain uses within the Restricted Area; and

WHEREAS, The Property must be subject to certain covenants and restrictions as provided in Article 15 of Title 25, Colorado Revised Statutes, which covenants and restrictions shall burden the Property and bind WMC and all parties now or subsequently having any right, title or interest in the Property, or any part thereof, and any persons using the land, as described herein, for the benefit of the Department, WMC, any subsequent owners of the Property, and the OWNER as defined below.

## DACWPF Restrictive Notice

NOW, THEREFORE, the Department issues this Restrictive Notice pursuant to § 25-15-321.5, C.R.S. The Property as described in Exhibit A shall hereinafter be bound by, held, sold, and conveyed subject to the following requirements set forth in paragraphs 1 through 13, below, which shall run with the Property in perpetuity and be binding on WMC and all parties now or subsequently having any right, title or interest in the Property, or any part thereof, and any persons using the land, as described herein. As used in this Restrictive Notice, the term OWNER means the then current record owner of the Property and, if any, any other person or entity otherwise legally authorized to make decisions regarding the transfer of the Property or placement of encumbrances on the Property, other than by the exercise of eminent domain.

### 1. Use restrictions within the Restricted Area.

- a. OWNER must ensure that any and all uses of the Restricted Area do not interfere with any post-closure care activity as specified by the provisions of the applicable RCRA permit or other enforceable document issued pursuant to the Colorado Hazardous Waste Regulations, 6 CCR 1007-3 §100.10(d) (the "Permit"). A copy of the Permit will be found on file at the Department. The use of the Restricted Area shall be restricted to the activities allowed by or necessary to fulfill the requirements of the Permit.
- b. Access to the Restricted Area shall be restricted, and access controls maintained, as required by the Permit.
- c. Except as authorized by the Department or the Permit, no person shall: (i) remove or utilize groundwater from the existing wells in the Restricted Area; (ii) withdraw or utilize any surface water from the Restricted Area; (iii) construct any new groundwater well in the Restricted Area; or (iv) remove or utilize groundwater from such new well.
- d. Except as authorized by the Department or the Permit, digging, drilling, or any other excavation or disturbance that will disturb the integrity of the final cover and liner systems in the Restricted Area is prohibited.
- e. Irrigation of the final cover is prohibited, except as approved by the Department, and weeds or other vegetation atop the final cover shall be controlled and removed in accordance with the Permit.
- f. No structure may be built or placed on the final cover, except as authorized by the Department in writing.

2. Modifications This Restrictive Notice runs with the land and is perpetual, unless modified or terminated pursuant to this paragraph and pursuant to § 25-15-321.5, C.R.S. or any successor statute. OWNER may request that the Department approve a modification or termination of this Restrictive Notice. The request shall contain information showing that the proposed modification or termination shall, if implemented, ensure protection of human health and the environment. The Department shall review any

## DACWPF Restrictive Notice

submitted information and may request additional information. If the Department determines that the proposal to modify or terminate this Covenant will ensure protection of human health and the environment, it shall approve the proposal. No modification or termination of this Covenant shall be effective unless the Department has approved such modification or termination in writing. Information to support a request for modification or termination may include one or more of the following:

- a. a proposal to perform additional remedial work;
  - b. new information regarding the risks posed by the residual contamination;
  - c. information demonstrating that residual contamination has diminished;
  - d. information demonstrating that an engineered feature or structure is no longer necessary;
  - e. information demonstrating that the proposed modification would not adversely impact the remedy and is protective of human health and the environment; and
  - f. other appropriate supporting information.
3. Conveyances. OWNER shall notify the Department at least fifteen (15) days in advance of the closing on any proposed sale or other conveyance of any interest in any or all of the Property.
4. Notice to Lessees. The OWNER agrees to incorporate either in full or by reference the restrictions of this Covenant in any leases, licenses, or other instruments granting a right to use the Property.
5. Notification for proposed construction and land use. The OWNER shall notify the Department simultaneously when submitting any application to a local government for a building permit or change in land use.
6. Inspections. The Department, including its authorized employees, agents, representatives and independent contractors, shall have the right of entry to the Property at reasonable times with prior notice for the purpose of determining compliance with the terms of this Restrictive Notice.
7. Third Party Beneficiary. WMC and the OWNER of the Property are third party beneficiaries with the right to enforce the provisions of this Restrictive Notice as provided in § 25-15-322, C.R.S.
8. No Liability. The Department does not acquire any liability under State law by virtue of issuing this Restrictive Notice.
9. Enforcement. The Department and any named beneficiaries of this Restrictive Notice may enforce the terms of this Restrictive Notice pursuant to § 25-15-322, C.R.S. and may file suit in district court to enjoin actual or threatened violations of this Covenant.

## DACWPF Restrictive Notice

10. Owner's Compliance Certification. The OWNER shall execute and return a certification form provided by the Department, on an annual basis, detailing the OWNER's compliance, and any lack of compliance, with the terms of this Restrictive Notice.

11. Severability. If any part of this Restrictive Notice shall be decreed to be invalid by any court of competent jurisdiction, all of the other provisions hereof shall not be affected thereby and shall remain in full force and effect.

12. Subdivision of Property. Prior to any subdivision of the Property, OWNER shall submit a plan addressing payment of annual inspection fees and certification of compliance with the restrictions set forth in paragraph (1) of this Restrictive Notice at least ninety (90) days prior to creating the subdivision. The Department shall approve the plan if it determines that the plan reasonably will ensure continued compliance with the requirements of this Restrictive Notice. Any Department notice of disapproval shall include the Department's rationale for its decision, including any additional information or changes to the plan that the Department requires before the plan can be approved. Any appeal of a Department notice of disapproval shall be taken in accordance with section 25-15-305(2), C.R.S. If OWNER fails to obtain approval of such plan prior to subdividing the Property, the owner of each subdivided parcel shall continue to be responsible for paying a separate annual inspection fee and certifying compliance with the restrictions set forth in paragraph (1) of this Restrictive Notice.

13. Notices. Any document or communication required under this Restrictive Notice shall be sent or directed to:

Hazardous Materials and Waste Management Division  
Colorado Department of Public Health and the Environment  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530

[illegible]

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ by \_\_\_\_\_ on behalf of the Colorado Department of Public Health and Environment.

Notary Public

My commission expires: \_\_\_\_\_

## **EXHIBIT A**

### LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE NORTH ONE-HALF OF THE SOUTHEAST ONE-QUARTER OF SECTION 32, TOWNSHIP 4 SOUTH, RANGE 65 WEST OF THE 6<sup>TH</sup> PRINCIPAL MERIDIAN, COUNTY OF ARAPAHOE, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 32;

THENCE N00°12'03"E ALONG THE EAST LINE OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 32, WITH ALL BEARINGS HEREIN RELATIVE THERETO, A DISTANCE OF 1324.26 FEET TO THE SOUTHEAST CORNER OF THE NORTH ONE-HALF OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 32;

THENCE N89°49'00"W ALONG THE SOUTH LINE OF THE SAID NORTH ONE-HALF OF THE SOUTHEAST ONE-QUARTER OF SECTION 32, A DISTANCE OF 943.86 FEET TO THE POINT OF BEGINNING;

THENCE CONTINUING N89°49'00"W ALONG THE SAID SOUTH LINE OF THE NORTH ONE-HALF OF THE SOUTHEAST ONE-QUARTER OF SECTION 32, A DISTANCE OF 1300.00 FEET;

THENCE N00°18'53"E, A DISTANCE OF 1019.30 FEET;

THENCE N39°45'14"E, A DISTANCE OF 236.50 FEET,

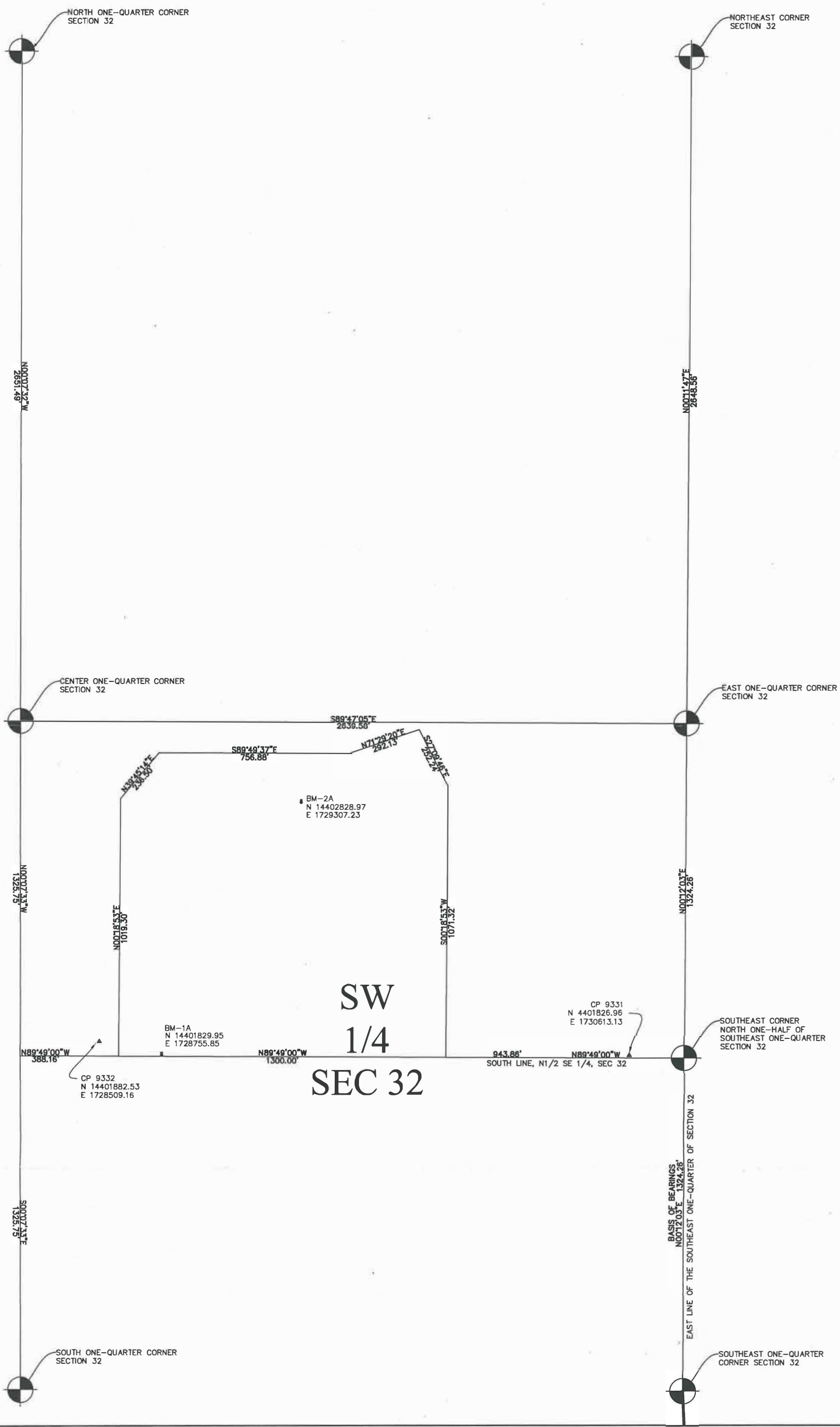
THENCE S89°49'37"E, A DISTANCE OF 756.88 FEET;

THENCE N71°29'20"E, A DISTANCE OF 292.13 FEET;

THENCE S27°09'46"E, A DISTANCE OF 252.24 FEET;

THENCE S00°18'53"W, A DISTANCE OF 1071.32 FEET TO THE POINT OF BEGINNING,

CONTAINING A CALCULATED AREA OF 1,559,303 SQUARE FEET OR 35.797 ACRES.



REFERENCE

LEGAL DESCRIPTION PROVIDED IN UTM, ZONE 13 BY  
ED SILVER OF NOLTE ASSOCIATES.

LEGAL DESCRIPTION  
AND BENCHMARKS

FIGURE E-1



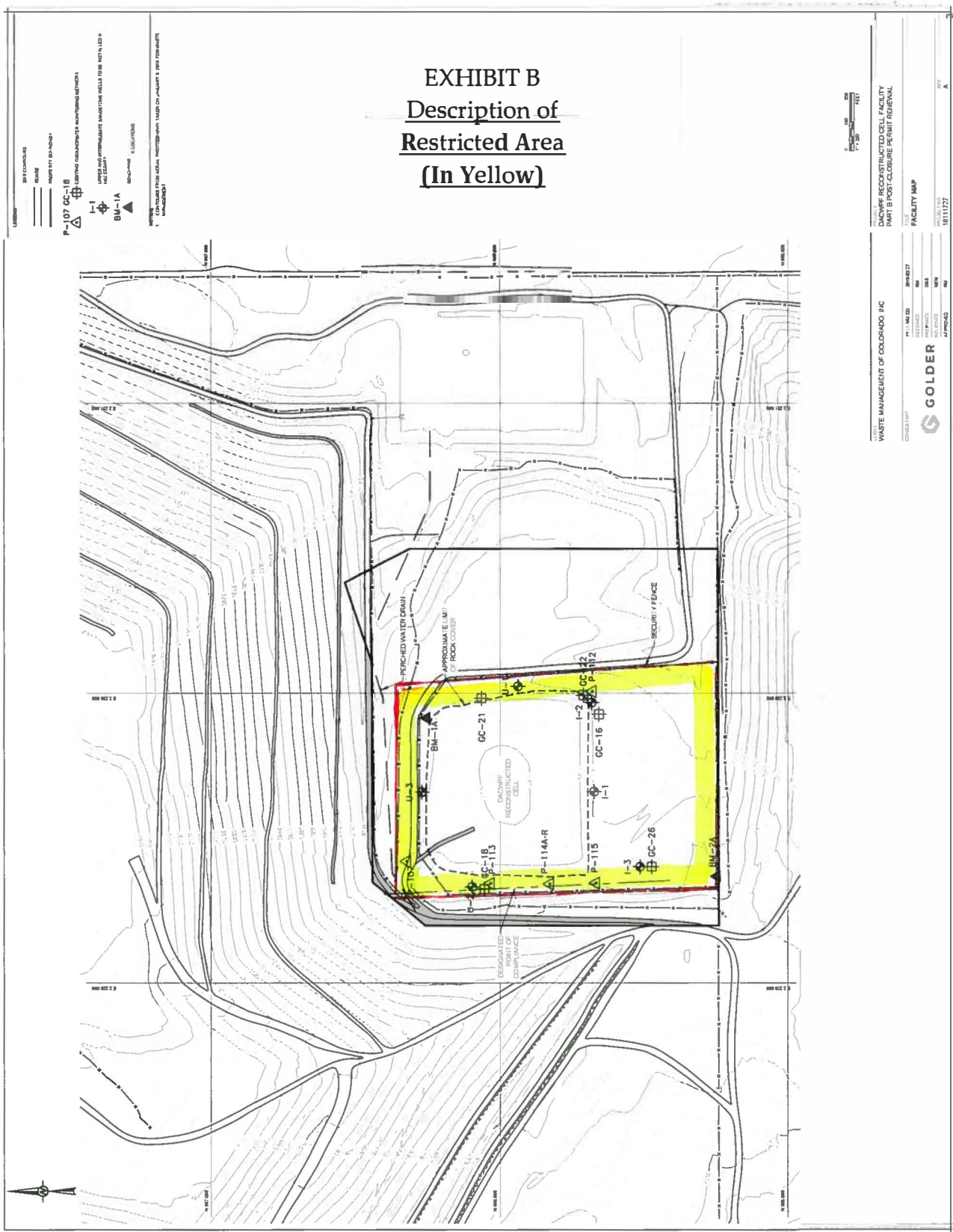


EXHIBIT B  
Description of  
Restricted Area  
(In Yellow)

DATE: 10/1/2014  
BY: [Signature]  
PROJECT: [Project Name]  
SHEET: 10/1/2014  
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WASTE MANAGEMENT OF COLORADO, INC.  
CONSULTANT  
PROJECT: [Project Name]  
SHEET: 10/1/2014  
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**Attachment F**

# Groundwater Protection Program

## 1.0 DETECTION MONITORING INDICATOR PARAMETERS

The constituents listed in the following Table F-1 will be used as indicator parameters of groundwater contamination during post-closure care detection monitoring:

**TABLE F-1**  
**GROUNDWATER INDICATOR PARAMETER AND WASTE CONSTITUENT LIST**  
 (numerical values are in µg/L = micrograms per liter)

CONSTITUENT	REPORTING LIMIT	GROUNDWATER STANDARD
pH, Temperature, Conductivity	NA	NA
Total Suspended Solids	NA	NA
Benzene	5.0	5.0
Bromoform	4.0	4.0
Carbon Tetrachloride	1.0	5.0
Chlorobenzene	5.0	100.0
Chlorodibromomethane	5.0	NA
Chloroethane	10.0	NA
Chloroform	3.5	3.5
Dichlorobromoethane aka (Bromodichloromethane)	0.5	0.56
1,1-Dichloroethane	5.0	NA
1,2-Dichloroethane	1.0	5.0
1,1- Dichloroethylene aka (Dichloroethene)	5.0	7.0
1,2-Dichloropropane	1.0	5.0
cis-1,3-Dichloropropylene aka (Dichloropropene)	5.0	NA
Ethylbenzene	5.0	700
Methyl bromide aka (Bromomethane)	10.0	NA
Methyl chloride aka (Chloromethane)	10.0	NA
Methyl ethyl ketone	100.0	NA
1,1,2,2-Tetrachloroethane	0.18	0.18
Tetrachloroethylene aka (Tetrachloroethene), (Perchloroethene)	5.0	5.0
Toluene	5.0	1,000
1,2-Trans-dichloroethene	10.0	100
1,1,1-Trichloroethane	5.0	200
1,1,2-Trichloroethane	3.0	5.0
Trichloroethylene aka (Trichloroethene)	5.0	5.0
Vinyl Chloride	2.0	2.0
PFOA/PFOS	0.01	0.07*

CONSTITUENT	REPORTING LIMIT	GROUNDWATER STANDARD
Arsenic	10.0	10.0
Barium	200.0	2,000
Cadmium	5.0	5.0
Chromium (Total)	10.0	100
Lead	5.0	50
Mercury	0.2	2.0
Selenium	5.0	50
Silver	25.0	50

\*EPA's health advisory level

### 1.1 Groundwater Sampling

All sampling will be conducted pursuant to ASTM protocol or equivalent. The following steps will be performed for detection groundwater monitoring:

- Step 1. Inspection. Prior to purging or sampling, each monitoring point will be inspected. The condition of the sampling equipment and the well structure which could affect the collection system will be noted.
- Step 2. Static Water Level Measurement. Prior to purging, the wells in each sandstone unit will be opened (uncapped) for roughly 30 minutes prior to measuring water levels. Static water level will then be measured and recorded until reproducible results are obtained. The static water level will be measured as the depth to water in the well from the top of the casing and will be recorded to the nearest 0.01 foot. Water level probes, which were calibrated when the wells were installed and need no additional calibration, will be inspected for damage prior to each sampling event.
- Step 3. Well Purging. Monitoring wells will be purged prior to sample collection in order to obtain representative samples of the formation water rather than the stagnant water from the well casing. Purging completion is based on achieving stabilization (+/- 10%) of the water level within the well and water quality field indicator parameters measured during purging. Pump flow rates should be selected to approximate the yield of the well so that a stabilized pumping water level is achieved as quickly as practical, thus expediting the stabilization of the field indicator parameters. Field indicator parameter measurements should be initiated when purging begins and continued at regular intervals until stabilization is achieved. Purged water will be stored in 35-gallon or 55-gallon drums and disposed of appropriately following review of the laboratory analytical results.
- Step 4. Sample Withdrawal. Once stabilization has been achieved during purging, sampling can be conducted at the same pumping rate or at a lower flow rate if

desired. If a sufficient amount of water is unobtainable for all analyses, the priority of analysis will be VOCs, PFAS and then metals. If a sufficient amount of water is unobtainable for any analysis, the well will be considered dry, and the Permittee will not be considered out of compliance for that sampling event. The dry condition will be documented in the annual report that is submitted to the Department for review and approval. Sections IV.A and/or IV.B of the Permit will then be implemented depending on specific circumstances.

- Step 5. Sample Handling. Samples for VOCs will be unfiltered and unpreserved in accordance with Colorado requirements. Samples for metals will have the appropriate acid preservative added in the field and will be filtered through a 0.45 micron membrane filter prior to preservation. All bottles will be pre-labeled and supplied by a pre-approved laboratory. The VOC sample bottles will be 40 ml glass bottles which contain Teflon-lined septums in the cap. Each bottle will be filled slightly more than full prior to being capped to ensure that no head space exists once the bottle is capped. Sampling will be performed consistent with ASTM D4448-01 – “Standard Guide for Sampling Ground-water Monitoring Wells” or equivalent. Sampling for PFOA/PFOS (collectively PFAS) will be conducted in general accordance with the February 8, 2019 Groundwater Screening Proposal. So as to avoid cross-contamination concerns PFAS sampling may take place on a separate day. Immediately after sample collection, bottles will be placed in sealed, insulated shuttles, and packed with ice to cool the samples to a temperature of 4°C or less. The shuttles will be shipped to the laboratory for arrival within 72 hours.
- Step 6. Chain-of-Custody Procedures. The following chain-of-custody program will be used to trace the possession and handling of the individual samples. Samples from the same sample point that are placed in more than one sample cooler require a Chain-of-Custody Record in each sample cooler. Any problems with the sample cooler's contents will also be noted on the form. Upon receipt of the sample cooler by the lab, the condition of the samples, temperature, date, and time will be recorded on the Field Chain-of-Custody Record by the log-in personnel receiving the sample coolers. The Field Chain-of-Custody Record indicates by bottle and analysis group whether samples are preserved. The sampling team must record the field filtration, preservative, and any deviations from normal preservation requirements on the Chain-of-Custody Record (the sampler will initial the forms if this information is preprinted on forms provided by the lab). Other Chain-of-Custody procedures are described in Section 2.6.

## 1.2 Laboratory Analytical Procedures

The laboratories approved for the detection groundwater monitoring program will use approved standard laboratory procedures as specified in EPA's Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846 2nd Edition, Standard Methods of Wastewater Analysis, or an equivalent method approved by the Department. TestAmerica Laboratories Inc. in Arvada, Colorado or a similar environmental laboratory will perform chemical analysis of the groundwater. The particular SW-846 test methods will be as follows:

CONSTITUENT	EPA SW-846 TEST METHOD
VOCs	8260B
Arsenic, Barium, Cadmium, Chromium (total), Lead, Silver, Selenium	6010B
Mercury	7470A
PFOA/PFOS	537 Modified until 8328 is finalized

## 1.3 QA/QC

Quality Assurance and Quality Control (QA/QC) procedures will be applied to both field and analytical laboratory data in order to ensure the reliability and validity of the data. The QA/QC procedures are described below.

One field blank sample will be taken for every ten groundwater samples collected or one per day during each sampling event, whichever is greater, to detect contamination that may be introduced: (1) in the field (either atmospheric or from specific sampling equipment); (2) in transit to or from the sampling site; (3) in sample container preparation, sample log-in, or sample storage stages within the laboratory; or (4) during sample processing and analysis within the confines of the laboratory. A complete set of sample containers will be supplied by the laboratory and reagent-free deionized water will be used for the preparation of blank samples. Groundwater sampling procedures will be simulated for the filling of field blank samples. The filled sample bottles will be packed with ice and shipped to the laboratory for analysis along with the groundwater samples.

One QA duplicate will be collected for every twelve groundwater samples collected or one during each sampling event, whichever is more frequent, to be used as a check on the precision of sampling and analytical procedures. During a sampling sequence, a blind duplicate sample will be taken from the selected monitoring well(s) simultaneously with the regular field sample and analyzed along with all samples. During subsequent sampling rounds, different well(s) will be selected and the same procedures will be used to obtain the duplicate(s).

The chain-of-custody record will be initiated at the time of sampling and will contain the well number, date and time of sampling, and the name of the sampler. This record will accompany each sample case and will be signed by all who handle sample containers. Sample transfers are noted on the record sheet for each sample. Upon receipt of samples at the laboratory, the shipping container will be examined, and the condition of samples, including temperature, will be recorded. The chain-of-custody procedures document sample transfer, sample possession, and sample integrity from collection through analysis. If samples are split and sent to multiple laboratories, a chain-of-custody record sheet will accompany each sample. Copies of chain-of-custody forms will be maintained at the laboratory conducting the analyses.

In addition, all laboratories will be required to maintain appropriate levels of quality control for all analyses performed.

#### **1.4 Background Monitoring**

The establishment of background values and their evaluations will be conducted in accordance with Permit Conditions IV.B, IV.C., and IV.D.

##### A. VOCs

No VOCs have had a confirmed detection in the Lower Sandstone Unit (LSU) since interim status quarterly groundwater monitoring for VOCs began in 1990. As a result, the "background" value for each of the VOCs is set at the "reporting limit" ("RL") listed in Table F-1 in the LSU. The permit-required RL for each VOC listed in Table F-1 must be achieved when analyzing the samples.

These background values will be updated every other year using the additional data from the four most recent semi-annual monitoring events, and include information gained from all three sandstone units.

**B. Metals**

The background values for metals are the control limits and non-parametric prediction limits computed using the procedures outlined in the prior permit. The current values in the LSU are as follows:

Constituent	Units	Well	Background Value
Arsenic, total recoverable	UG/L	P-112	10.0000*
Arsenic, total recoverable	UG/L	P-113	10.0000*
Arsenic, total recoverable	UG/L	P-114A	10.0000*
Arsenic, total recoverable	UG/L	P-115	10.0000*
Barium, total recoverable	UG/L	P-112	27.4055
Barium, total recoverable	UG/L	P-113	22.9172
Barium, total recoverable	UG/L	P-114A	43.2311
Barium, total recoverable	UG/L	P-115	19.8164
Cadmium, total recoverable	UG/L	P-112	5.0000*
Cadmium, total recoverable	UG/L	P-113	5.0000*
Cadmium, total recoverable	UG/L	P-114A	5.0000*
Cadmium, total recoverable	UG/L	P-115	5.0000*
Chromium, total recoverable	UG/L	P-112	10.0000*
Chromium, total recoverable	UG/L	P-113	10.0000*
Chromium, total recoverable	UG/L	P-114A	14.1000*
Chromium, total recoverable	UG/L	P-115	10.0000*
Lead, total recoverable	UG/L	P-112	5.0000*
Lead, total recoverable	UG/L	P-113	5.0000*
Lead, total recoverable	UG/L	P-114A	5.0000*
Lead, total recoverable	UG/L	P-115	5.0000*
Mercury, total	UG/L	P-112	0.2000*
Mercury, total	UG/L	P-113	0.2000*
Mercury, total	UG/L	P-114A	0.2000*
Mercury, total	UG/L	P-115	0.2000*
Selenium, total recoverable	UG/L	P-112	5.0000*
Selenium, total recoverable	UG/L	P-113	5.0000*
Selenium, total recoverable	UG/L	P-114A	5.0000*
Selenium, total recoverable	UG/L	P-115	5.0000*
Silver, total recoverable	UG/L	P-112	25.0000*
Silver, total recoverable	UG/L	P-113	25.0000*
Silver, total recoverable	UG/L	P-114A	25.0000*
Silver, total recoverable	UG/L	P-115	25.0000*

\*Detection Frequency < 25%

These background values will be updated every other year using the additional data from the four most recent semi-annual monitoring events, and include information gained from all three sandstone units.

### C. Others

No background values have been, or will be, calculated for field parameters pH, temperature, conductivity, or TSS because these parameters will not be subject to statistical analysis.

## **1.5 Data Management**

The results of the field and laboratory analyses performed on groundwater samples will be recorded for each sampling point and sampling event. The records will include the following information as required in the Permit:

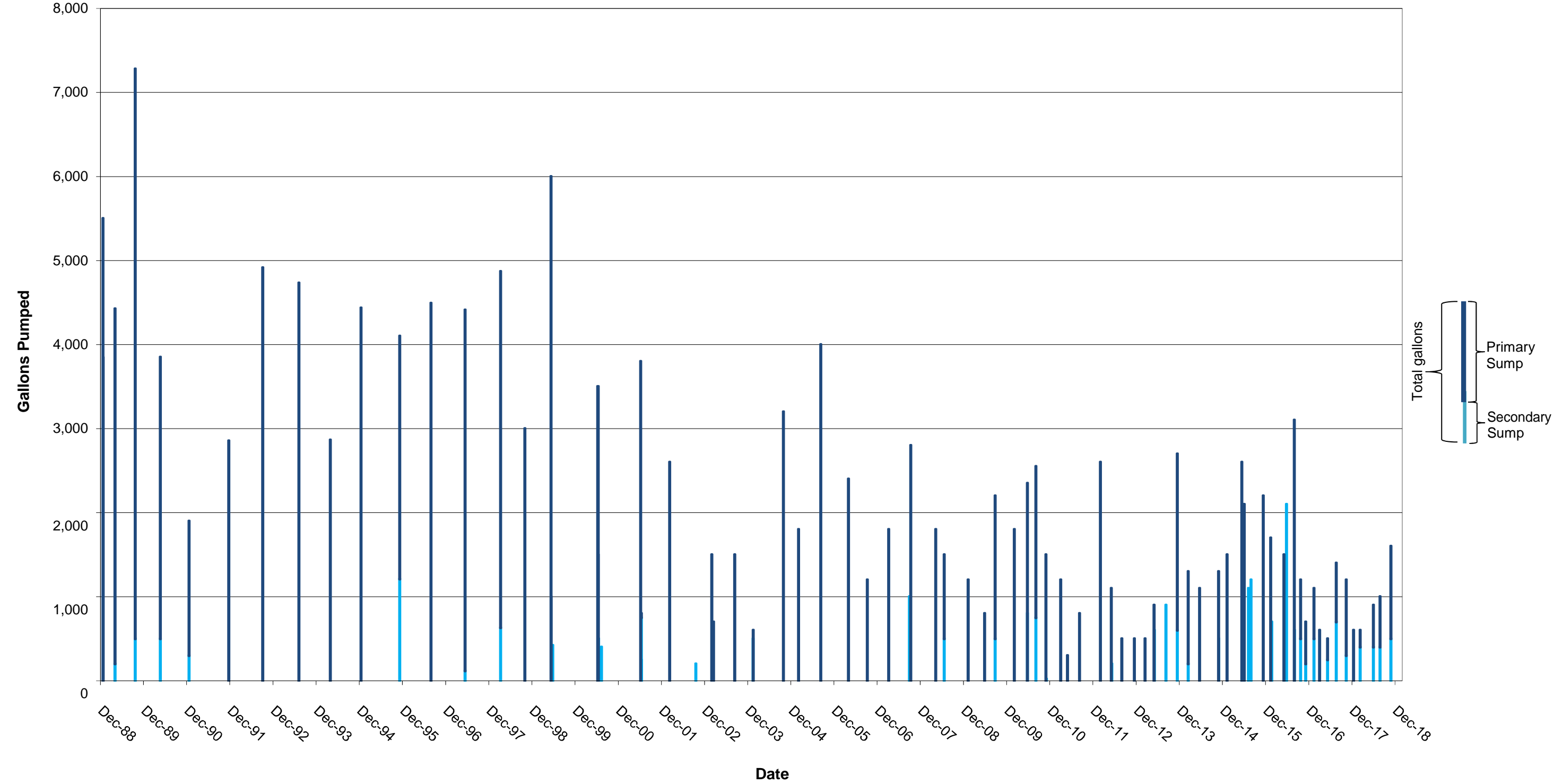
- Well identification and date of analysis;
- Analytical results for all required sample parameters, as well as results for QA/QC duplicates and test blanks;
- Field data (including temperature, pH, specific conductance, and water level);
- Description of analytical procedures and QA/QC protocol;
- Chain-of-custody forms;
- Summary of all computations (including example calculations; data for each of the calculations; each measured, known, or estimated value so that each calculation may be verified by the Director, or designee) required by this Permit to calculate background concentrations and to determine if there has been a statistically significant increase above background (SSI); and
- Contaminant concentration maps including annotated values associated with each monitoring point, if contaminants above background are detected.

Laboratory data will be presented in tabular and/or graphic form. In addition, copies of the laboratory analysis and field (inspection) data sheets for the reporting period will be included in the annual report. All raw analytical data will be stored by the analytical laboratory or the Permittee.

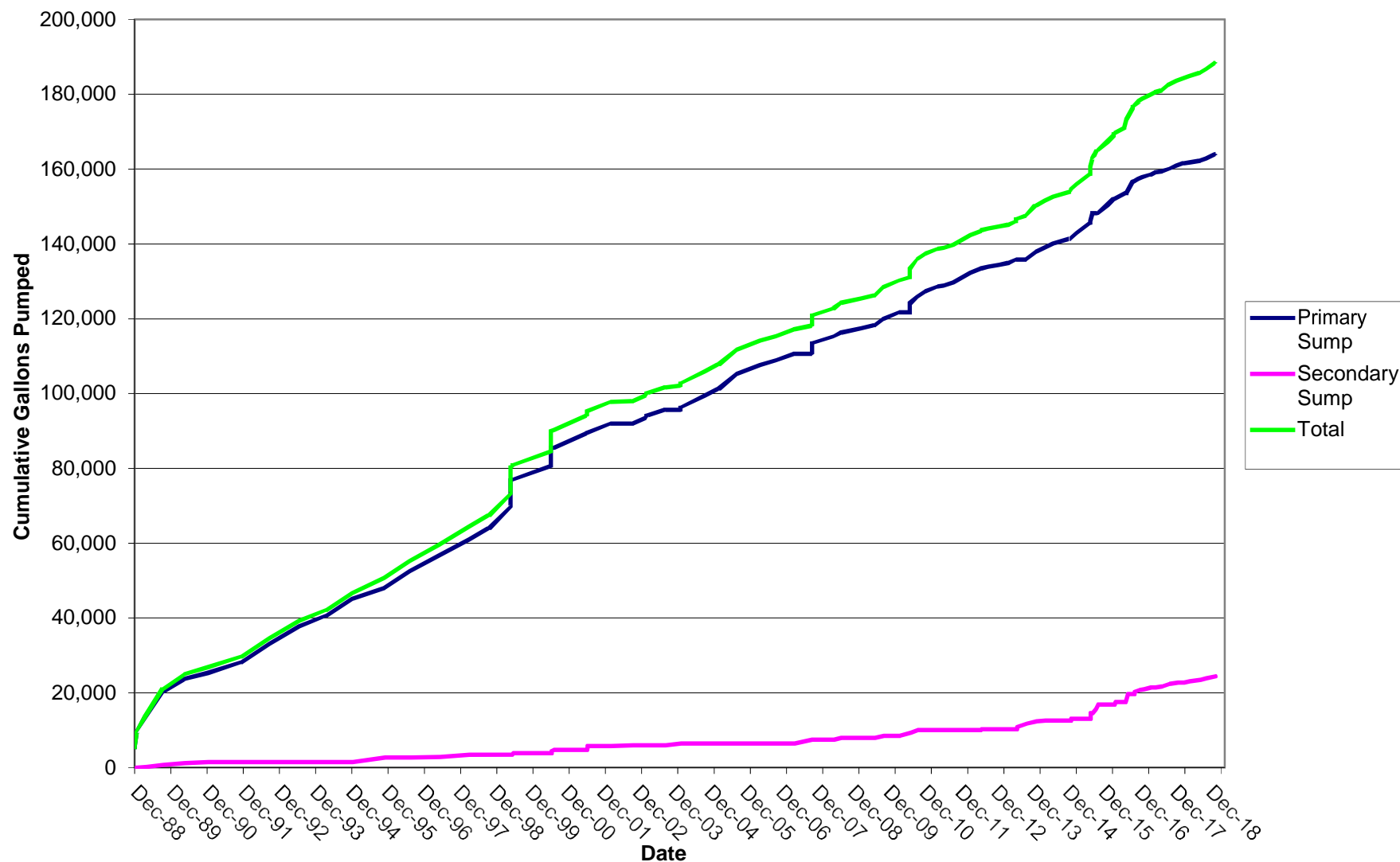
**Attachment G**

## Leachate Pumping Results

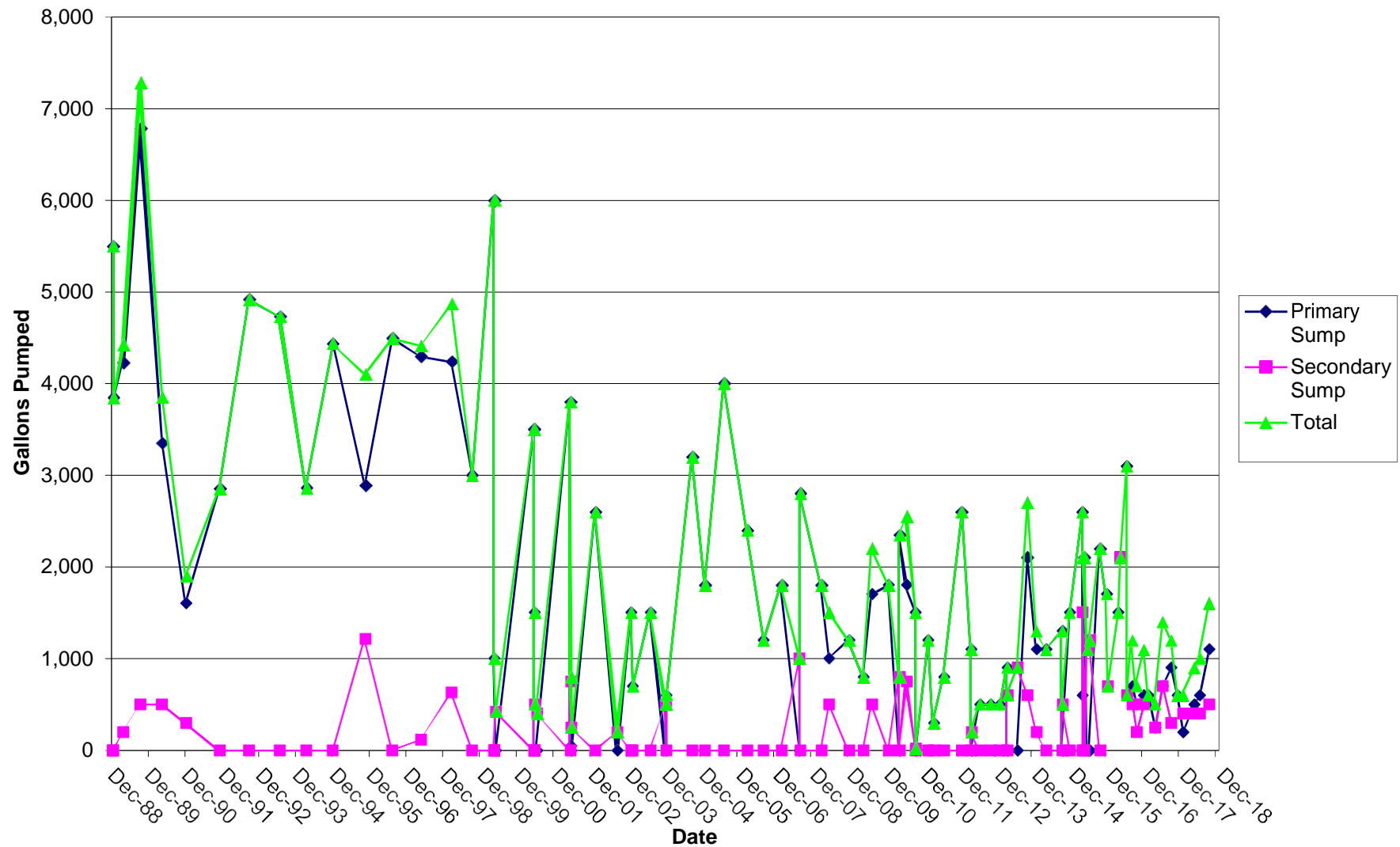
**FIGURE G-1**  
**Pumping Summary**  
**Primary and Secondary Sumps**



**FIGURE G-2**  
**Cumulative Pumping Summary**  
**Primary and Secondary Sumps**



**FIGURE G-3**  
**Pumping Summary**  
**Primary and Secondary Sumps**



**Attachment H**

# Personnel Training Plan

## **1.0 INTRODUCTION**

In accordance with the regulatory requirements of 6 CCR 1007-3, Section 100.41 (a)(12), this Training Plan has been developed for the post-closure care of the facility.

## **2.0 POSITION (JOB) DESCRIPTIONS**

Training is tailored to prepare the worker to safely and effectively perform the functions of his/her position and to ensure that the worker will be able to respond effectively to emergency situations at the facility. Job descriptions are the key to designing training programs because they identify the responsibilities and duties of each position.

Position descriptions, including basic function, specific duties and responsibilities, and required qualifications will be maintained by the Permittee at the designated post-closure operational offices. A current list of job titles and the name of the worker (or third party contractor when appropriate) filling each respective position will also be maintained. The facility organization and position descriptions may be changed from time to time, as the facility implements modifications to its post-closure operations. The Training Plan will correspondingly be amended to reflect these modifications.

## **3.0 TRAINING FOR NEW PERSONNEL**

Personnel who are new to the facility (“new personnel”) will undergo introductory general training, which is defined in this section. In addition, special skills training (e.g., sampling of monitoring wells) may be required depending on job duties, other assigned responsibilities, and the prior experience of the new personnel. Some of the training requirements may be waived upon a demonstration of prior competence. Proof of competence may consist of transcripts from academic institutions, certificates of course completion, and/or work experience.

New personnel will complete a series of general training courses (including classroom and on the job instruction) to familiarize them with basic health and safety procedures, hazardous wastes, the facility, and the Contingency Plan. These courses will be designed to give new personnel basic skills to protect themselves and others and to implement the Contingency Plan.

### **3.1 Basic Health and Safety Training**

New personnel in positions that involve potential contact with hazardous wastes will receive basic health and safety training. This health and safety training will be conducted by qualified personnel and will meet OSHA requirements, pursuant to 29 CFR 1910.120, and include care, use, and limitations of protective equipment and clothing; chemical hazards and handling precautions; first aid; and regulatory requirements.

### **3.2 Orientation**

New personnel will also undergo an orientation session to introduce them to the management and maintenance operations of the facility. This orientation program will include procedures for entering and leaving the facility; facility layout; the nature and characteristics of hazardous wastes and materials at the facility; an overview of the facility's operations and safety rules; and general facility rules and administrative procedures; training requirements; and job duties.

During orientation, new personnel will be thoroughly familiarized with the facility's Contingency Plan. Training in emergency procedures will be provided by the Emergency Coordinator (EC), the alternate coordinator, or other qualified trainers. At a minimum, it will include:

- Description of possible emergency situations;
- Duties of the EC and others;
- Operation of communication systems;
- Location of emergency equipment; and
- Incident/action reporting mechanism(s).

This instruction will include a facility walk-through to: (1) point out areas of potential risk; (2) identify what to look for; and (3) show where emergency equipment are located. The Emergency Coordinator or other qualified trainer will ensure that new personnel have successfully demonstrated their knowledge of these topics.

#### **4.0 TRAINING PROGRAM ADMINISTRATION**

The trainers (instructors) will be recognized consultants or specialists in the specific fields being taught or will have broad experience in hazardous waste management.

Training will be conducted in classroom meetings, small discussion groups, in-field exercises, emergency drills, and on-the-job.

Corrective action will be taken as soon as a deficiency is observed so that the new personnel do not develop poor working habits.

Completion of required training will be entered into the training record.

New personnel will be allowed to perform work under reduced supervision at the facility when he or she has successfully demonstrated completion of the new personnel training requirements. New personnel must successfully complete the required training within six months after the date of their employment or assignment to the facility, or to a new position at the facility.

#### **5.0 CONTINUING TRAINING**

Periodic "refresher" training will be required and provided, as discussed herein.

##### **5.1 Frequency of Training**

Continuing training is designed to maintain proficiency in job skills, increase safety and quality consciousness, and to teach new skills. Such training will include regularly scheduled:

- Annual protective equipment reviews;
- Annual Contingency Plan refresher training;
- As needed training to teach new skills, new operating procedures, or greater depth in specific areas.

As-needed training will be provided to cover any changes in the facility plans, procedures, or operations, and to teach new skills -- either before or as such changes occur.

## **6.0 DOCUMENTATION OF TRAINING**

Training records will be maintained. They will include, as illustrated in the example training session record in Figure 1 of this Plan, a written description of the content of each training session, a list of attendees and trainers, the dates of training sessions, and the signatures of trainers and attendees certifying that the training was accomplished.

Training documentation for each worker will be maintained throughout the post-closure period, or for at least 3 years after the date such worker last worked at the facility, whichever period is shorter.

## TRAINING SESSION RECORD

Course:

Date:

Location/Time: \_\_\_\_\_

Description of Training:

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Printed Name	Signature	Work Location

Trainer(s) Name: \_\_\_\_\_

Trainer(s) Signature: \_\_\_\_\_

FIGURE 1